APPENDIX A — DECISION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED AND DECIDED AUGUST 24, 1998

United States Court of Appeals for the Federal Circuit

97-5090

HARDWICK BROTHERS COMPANY II,

Plaintiff-Appellant,

v.

UNITED STATES,

Defendant-Appellee.

DECIDED: August 24,1998

Before RICH, MICHEL, AND PLAGER, *Circuit Judges*. MICHEL, *Circuit Judge*.

DECISION

This is a sad case, for it appears that this government contractor of proven reliability and competence lost upward of $3 million on a $3 million contract to build a levee system. Nevertheless, because the risk of extra costs from wet conditions at the construction site was allocated to the contractor by the contract itself, there is no basis at law to provide the relief the contractor seeks. That it completed the project rather than walking away is to the contractor's credit but likewise provides no basis for relief.[1]

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1. According to Hardwick's counsel, since completing performance of the contract at issue here, Hardwick has sold off much of its equipment and, although it is continuing to operate, only accepts and performs "small" jobs although it was one of the largest contractors in the United States.

Appendix A

Hardwick Brothers Company II ("Hardwick") appeals from the judgment entered on March 27, 1997, by the United States Court of Federal Claims, denying most of its claim for an equitable adjustment of approximately $3 million filed against the United States Army Corps of Engineers (the "Corps") under the Contract Disputes Act of 1978, 41 U.S.C. §§ 601-13 (1994) (the "CDA"). *See Hardwick Bros. II v. United States*, 36 Fed. Cl. 347 (1996). Hardwick also appeals from a subsequent order awarding damages of only $28,145 to Hardwick. *See Hardwick Bros. II v. United States*, No. 88-702C (Order Mar. 26, 1997).

After reviewing the extensive record in this case and the Court of Federal Claims's opinion, we conclude that the Court of Federal Claims did not, as alleged, impose additional pre-bid requirements on Hardwick but correctly found, based on the evidence presented, that Hardwick failed to do an adequate site investigation or otherwise to act prudently to protect itself. We also conclude that the Court of Federal Claims correctly refused to apply the doctrine of implied warranty which arises when there are government-produced design specifications because the specifications here were performance specifications, that it correctly interpreted the contract as precluding relief for the extreme wet conditions experienced by Hardwick during construction of the levee system, and that it otherwise made findings of fact that are adequately supported by evidence in the record and thus are not clearly erroneous. We therefore *affirm*.

BACKGROUND

The Court of Federal Claims issued a seventy-page opinion in this case which contains a detailed recitation of the extensive and complex facts, and thus we only summarize certain of those

facts here. Briefly, Hardwick was the low bidder on a contract to construct a system of levees near Brunswick, Missouri, to contain Palmer Creek, which feeds into the Missouri River. The construction site was located in a river floodplain; at the time of bidding, Hardwick was an experienced levee contractor which had performed successfully on similar projects at other floodplain locations. In the six weeks prior to submitting its bid, Hardwick obtained and reviewed the bidding instructions, studied the plans, and made two site visits. Hardwick's bid contemplated construction of the levee system using the "compacted fill" construction method, one of two alternative methods allowed under the contract and specifications. This choice turned out to be improvident.

Hardwick was awarded the fixed price contract based on its low bid of $3,066,915 on May 27, 1977, and it received the notice to proceed on June 9, 1977. Weather and soil conditions over the next three years near Palmer Creek can at best be described as extremely wet, leading to extensive problems and delays in constructing the levee system. Eventually, on November 12, 1980, the Corps accepted the levee construction work as substantially complete. Hardwick had difficulty obtaining a complete copy of the relevant files from the Corps, but eventually submitted a certified claim to the contracting officer pursuant to the CDA in April 1986, initially requesting an equitable adjustment to the contract price in the amount of $1.9 million, but later amending the claim to request $3,736,096. The contracting officer denied liability as to all aspects of the claim, and Hardwick sued in the United States Claims Court in December 1988.

After an eight week trial and while the Claims Court's decision was pending, Hardwick filed a separate complaint

under the Federal Tort Claims Act, 28 U.S.C. §§ 2671-80 (1994), in the United States District Court for the Western District of Missouri on March 20, 1992. A decision on the merits was delayed, however, because this court subsequently issued its decision in *UNR Industries v. United States*, 962 F.2d 1013 (Fed. Cir. 1992) (*in banc*), prohibiting a litigant from pursuing the same cause of action in both the United States Claims Court and a federal district court. *See id.* at 1021. Hardwick therefore voluntarily dismissed its district court complaint. The Claims Court, however, in response to the *UNR Industries* decision, dismissed the cause of action before it. *See Hardwick Bros. II v. United States*, 26 Cl. Ct. 884, 888 (1992). On appeal, we reversed the decision of the Claims Court, holding that the second action, filed in the district court and then dismissed, did not divest the Claims Court of jurisdiction because the suit had been filed with the Claims Court first. *See Hardwick Bros. II v. United States*, 72 F.3d 883, 886 (Fed. Cir. 1995). We therefore remanded to the Claims Court's successor, the United States Court of Federal Claims, for disposition on the merits. The resulting decision, *Hardwick Bros. II v. United States*, 36 Fed. Cl. 347 (1996), is the basis for this appeal.

In a comprehensive opinion, the Court of Federal Claims, while denying nearly all of its claims, agreed with Hardwick that the Corps had misinterpreted the plain language of the lift thickness limitations in the specifications and, as a result, had overinspected Hardwick's construction and imposed moisture specification and manipulation requirements that were more stringent than those required in the contract specifications.[2] *See*

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2. "Lift thickness" refers to the height of the piles of material (soil and clay) piled by the bulldozers onto the levee during construction. When the compacted fill method is used, the original height of the lifts

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id. at 402. The court thus concluded that this aspect of Hardwick's claim would support an equitable adjustment. *See id.* The court denied, however, the remaining arguments Hardwick presented in support of further adjustments to the contract price. The court then ordered the parties "to negotiate in good faith to reach a stipulation regarding the amount of damages and interest which are supported by this Opinion." *Id.* at 422. The parties, however, were unable to reach agreement; the court therefore requested that they both submit damage estimates. After examining each party's proposal, the court adopted the estimate provided by the government, noting that Hardwick's "proposed damage analysis is an overly broad interpretation of this court's Opinion. This court found defendant liable for one small portion of [Hardwick's] case, not for seven 'inter-depend[e]nt' inefficiencies as argued by [Hardwick]." *Hardwick Bros. II v. United States*, No 88-702C, slip op. at 1-2 (Order Mar. 26, 1997). It consequently awarded Hardwick $28,145 in damages plus interest under the CDA. *See id.* at 2.

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are reduced during further manipulation and compaction after the lift is "cast" onto the levee. Under the contract, lift thickness was limited to no more than two feet; however, Hardwick interpreted this requirement as a limitation on the final height of the lift, after manipulation, while the contracting officer interpreted this requirement as applying to the original lift prior to casting. The Court of Federal Claims agreed that Hardwick's interpretation was correct. As a result of the contracting officer's unreasonable interpretation of the requirement, Hardwick was required to manipulate further the lifts after casting to achieve a level of compaction greater than that which would result using the alternative, uncompacted fill method and level of moisture of the lift material lower than that required in the contract plans. Thus, construction was more time-consuming than originally anticipated by Hardwick. *See generally* 36 Fed. Cl. at 400-02.

Hardwick filed a timely appeal challenging most of the Court of Federal Claims's factual findings and conclusions of law, as well as the amount of damages awarded. We have jurisdiction under 28 U.S.C. § 1295(a)(3) (1994); we accepted this case for submission following oral argument on August 6, 1998.

DISCUSSION

We review decisions by the Court of Federal Claims for errors of law and clearly erroneous findings of fact. *See Krygoski Constr. Co. v. United States*, 94 F.3d 1537, 1540 (Fed. Cir. 1996). We consider each of Hardwick's arguments in turn below.

I. Pre-Bid Site Investigation Requirements

It is well-settled law that a contractor who fails to perform an adequate site investigation bears the risk of any condition that it could have discovered if the investigation had been reasonable. *See, e.g., Al Johnson Constr. Co. v. United States*, 854 F.2d 467, 470 (Fed. Cir. 1988) (reasonable contractor can be presumed to have examined the plans and specifications and investigated the site). The Court of Federal Claims found that the boring data provided by the Corps revealed the possibility of a very high water table; it concluded, therefore, that Hardwick was put on notice of the possibility that conditions at the construction site would be consistently wet and that a reasonable investigation would have confirmed this. Hardwick has failed to point to any evidence in the record that would demonstrate clear error in this finding.

Hardwick argues on appeal, however, that the Court of Federal Claims imposed additional and burdensome

requirements on contractors preparing to bid on a contract. Specifically, Hardwick argues that the court's opinion requires a "reasonable" contractor to perform its own detailed soil borings, to hire an expert, and to request a bid postponement when if feels it will not have sufficient time to review data made available by the Corps, and that these requirements are contrary to law.

A careful reading of the court's opinion, however, reveals that no such requirements were imposed. The court found that the information provided to potential bidders by the Corps "on balance *gave sufficient notice to reasonably prudent bidders* of poor subsurface conditions, including the possibility of high water tables and soft soils," and thus was "generally adequate for this floodplain levee project to warn Hardwick of the operational problems it encountered." *Hardwick*, 36 Fed. Cl. at 400 (emphasis added). In light of this finding, which we conclude was not clearly erroneous, the court further noted that, where the information about the site is obviously not current, as indicated by the testing dates accompanying the boring data provided, a reasonable contractor would consider verifying the information rather than assuming that the site conditions remained consistent with that data. *See id.* The court does suggest that more extensive boring data might have helped, but notes that, regardless, Hardwick had no reason to be surprised by the wet conditions it encountered based on the information it already had. Because Hardwick was an experienced floodplain contractor and yet made this incorrect assumption, the court wondered if Hardwick perhaps did not understand the data provided and suggested that, in such circumstances, a reasonable contractor would hire an expert to interpret the data. *See id.* The court did not, however, impose hiring an expert as a legal pre-bid requirement.

The Court of Federal Claims did agree with Hardwick that two days was an insufficient amount of time to review all of the information contained in the field books, and suggested that a reasonable bidder, "knowing the potential importance of the field books to an accurate bid, would have requested a few day's postponement" of the bidding. *Id.* at 388. This suggestion, however, was made by the court in the context of Hardwick's argument regarding the doctrine of superior knowledge; the court found that, in fact, the information contained in the books was available from other sources already accessible to potential bidders, and thus concluded that the unavailability of the field books until two days before the bidding deadline did not support a superior knowledge argument. *See id.* The discussion of bid postponement, therefore, is not the basis for the court's decision against Hardwick and does not impose a new legal requirement on bidders to request an extension of time, as Hardwick suggests.

We conclude, therefore, that the Court of Federal Claims did not commit any error of law and we affirm the court's decision with respect to Hardwick's failure to act as a reasonable and experienced contractor should have under the circumstances.

II. Implied Warranty of Acceptability for Compliance with the Specifications

Hardwick argues that the Court of Federal Claims improperly failed to apply the doctrine of implied warranty in view of its compliance with the specifications provided by the Corps. In *United States v. Spearin*, 248 U.S. 132 (1918), the United States Supreme Court held that "if the contractor is bound to build according to plans and specifications prepared

by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications." *Id.* at 136. This court has subsequently applied this doctrine — the *Spearin* doctrine — in a specific and narrow fashion. As we explained in *Stuyvesant Dredging Co. v. United States*, 834 F.2d 1576 (Fed. Cir. 1987), the *Spearin* doctrine applies only to a specific type of contract specifications:

> Design specifications explicitly state how the contract is to be performed and permit no deviations. Performance specifications, on the other hand, specify the results to be obtained, and leave it to the contractor to determine how to achieve those results. Detailed design specifications contain an implied warranty that if they are followed, an acceptable result will be produced.

Id. at 1582. Thus, the *Spearin* doctrine applies only where the government provides detailed design specifications. *See also USA Petroleum Corp. v. United States*, 821 F.2d 622, 624 (Fed. Cir. 1987) (*Spearin* doctrine applies to government's failure to provide accurate strapping tables); *Ordnance Research, Inc. v. United States*, 609 F.2d 462, 479-80 (Ct. Cl. 1979) (government was liable under breach of implied warranty theory for damages resulting from explosions where contractor precisely followed government's detailed but defective specifications for making explosives).

Hardwick argues that this narrow interpretation of the *Spearin* doctrine, as applying only to design specifications, has been eroded. We find no support for this contention in our case law, however, and Hardwick points us to none. Hardwick also argues that the specifications provided by the Corps here are

actually design, not performance specifications, but in making this argument, Hardwick ignores the true nature of design specifications. Hardwick argues that the contour data was extensive and detailed, but the contour data goes to the site, and makes no representations about the character of the levee system to be built in order to satisfy the Corps. Thus, we cannot conclude that the Court of Federal Claims's categorization of these specifications as performance specifications was clearly erroneous, and therefore we agree that the *Spearin* doctrine, as a matter of law, does not apply.

III. Flood Damage Provision

Hardwick argues that the Court of Federal Claims misconstrued the "Damage to Work" clause in the contract and thus improperly refused to award compensation for damage attributable to "flooding" during construction. The "Damage to Work" clause, SP-15, states:

> The responsibility for damage to any part of the permanent work shall be as set forth in the clause of the contract entitled "Permits and Responsibilities" [which states that the contractor shall bear the risk of damage until work is complete]. However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood or earthquake, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor will make the repairs as ordered by the Contracting Officer and full compensation for such repairs will

> be made at the applicable contract unit or lump sum prices as fixed and established in the contract. . . .

The Court of Federal Claims noted that this exception to the general allocation of risk placed on the contractor must be construed narrowly, and relied on a particular gauge reading farther downstream to establish whether and when flooding had occurred at the site. Hardwick argues that this interpretation of the contract is incorrect, but fails to provide an alternative, reasonable interpretation of the "Damage to Work" clause. Certainly, the Corps did not intend to accept responsibility for all additional costs attributable to wet conditions, because the job site was located on a river floodplain which is inherently susceptible to high water; the Court of Federal Claims's reliance on an objective criterion to determine flood conditions rather than *any* site wetness is consistent with case law on similar facts and is eminently more reasonable. *See, e.g., Utility Contractors, Inc. v. United States*, 8 Cl. Ct. 42, 47 (1985) (holding that an objective standard for flood damage responsibility is workable and avoids undesirable contingencies). We therefore affirm the court's interpretation of the "Damage to Work" clause and agree that Hardwick has failed to demonstrate it was entitled to damages under that clause.

IV. Other Issues

The remainder of the issues raised by Hardwick on appeal are essentially challenges to the Court of Federal Claims's fact-findings. We note, however, that the court's opinion provides a detailed analysis of all of the evidence presented by both parties and justifies carefully each factual finding made in light of that evidence. We have not been persuaded that any

of these factual findings are clearly erroneous. Certainly, Hardwick has failed to point to any evidence in the record which would justify our reversal of any finding upon which the Court of Federal Claims's decision is based.

We do note that Hardwick lost a significant amount of money on this contract and appears to be the victim of extreme soil and weather conditions, and was further injured by the discretionary decision of the contracting officers involved in this contract. It is conceivable that another contracting officer might have decided in favor of Hardwick, or provided some relief to avoid this extreme situation. We note, however, that just as we defer to the discretion of Boards of Contract Appeals as experts in evaluating contracting conditions, *see, e.g.*, *Al Johnson*, 854 F.2d at 471, so too must we defer to the discretion of a contracting officer who is available at the construction site to evaluate the conditions and who has extensive expertise in assessing difficulties in the performance of such projects. Although that discretion as exercised in this case led to regrettable financial loss for Hardwick, based on the evidence below and argument presented on appeal we have no justifiable basis to reverse and require the award of additional compensation as an equitable adjustment.

CONCLUSION

Hardwick has failed to demonstrate that the Court of Federal Claims made findings of fact that were clearly erroneous or committed any error of law. Therefore, we must affirm the court's decision and deny Hardwick the additional $3 million in monetary relief it seeks.

APPENDIX B — OPINION OF THE UNITED STATES COURT OF FEDERAL CLAIMS DATED AND FILED JULY 31, 1996

In the United States Court of Federal Claims

Docket No. 702-88C

(Filed July 31, 1996)

HARDWICK BROTHERS COMPANY, II,

Plaintiff,

v.

THE UNITED STATES,

Defendant.

Contract Disputes Act; Defective design; Detective plans and specifications; Bad faith; Unfair dealing and spoliation of evidence; Performance versus design specifications; Differing site conditions; Superior knowledge; Adequacy of borings; Value engineering cost proposal; Over-inspection; Damage to work; Trucking costs; Computation of quantities; Interest.

Michael J. Blake, Kansas City, Missouri, for plaintiff. *Lawrence Lerner*, of counsel.

Margaret L. Baskette, with whom were *Frank W. Hunger*, Assistant Attorney General, and *David M. Cohen*, Director, Washington, D.C., for defendant. *Jerusha L. White and R. Dale Holmes*, of counsel.

Appendix B

OPINION

***ROBINSON*, Judge:**

This case is before the court on remand from the U.S. Court of Appeals for the Federal Circuit. 72 F.3d 883, 886 (1995). This court had previously dismissed the case after trial for lack of jurisdiction. 26 Cl. Ct. 884 (1992). The Federal Circuit reversed that ruling, and the case is now ready for disposition.

The litigation arises out of a contract between the United States Army Corps Engineers ("the Corps") and Hardwick Brothers Company II ("Hardwick" or "plaintiff") for the construction of a system of levees described as Phase I of L-246, part of a three-phased comprehensive flood control project north of the Missouri River near Brunswick, Missouri ("the Project" or "the Palmer Creek job") in the late 1970's.[1] The Corps designed the Project, in part, to contain Palmer Creek, which flows southward into Cut-Off Lake, an oxbow lake, before flowing south into the Missouri River. The levee system was intended to protect agricultural lands in the Brunswick-Dalton Drainage District ("the District") from flooding.[2]

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1. Phase I of L-246 is properly described as a Missouri River Levee as opposed to simply an "agricultural levee" because it is not privately owned. The designation "L-246" signifies that the project is on the left bank of the Missouri River at river mile 246, counting from its confluence with the Mississippi River immediately north of St. Louis, Missouri.

2. The Corps cannot proceed with an approved levee project until a non-federal, local drainage district sponsor is obtained and qualified under state law. With regard to the Project, this sponsor was the District

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Appendix B

As amended, the complaint seeks $3,797,276.50 in equitable adjustments and other damages. Plaintiff bases its various monetary demands upon separately stated, but sometimes overlapping, claims for relief. These claims, in brief, allege that plaintiff's losses were due to defendant's defective or deficient engineering in designing the Project, defective plans and specifications, differing site conditions, a breach of the implied covenant of good faith and fair dealing, spoliation of evidence, nondisclosure of superior knowledge, and over-inspection of plaintiff's work, all of which resulted in job inefficiencies and extra operating costs.

After a careful review of the transcript, exhibits, briefs and the respective oral arguments of the parties, the court finds that defendant is liable to plaintiff only with respect to one of plaintiff's claims based on over-inspection. All of plaintiff's remaining claims are denied. The court's reasoning follows.

Factual Background

In 1976, when Hardwick won the contract here in dispute, plaintiff was a successful, experienced levee contractor with

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which was incorporated under the laws of the State of Missouri by decree of the Circuit Court of Chariton County, Missouri, dated June 18, 1964. Typically, sponsors of such projects are the owners and operators of the levee who, among other commitments, agree to secure the necessary rights-of-way, provide adequate sources of borrow, provide ponding easements, hold and save the United States harmless from damage and maintain the levees and channels, if any, after completion. In this case the Corps' agreement with the District provided that the government would comply with all legal requirements to build the levee and that the District would assume responsibility for its maintenance and operation thereafter.

good credit and financial resources. During Hardwick's prior fifty years in business (including all predecessor entities), the company had performed many similar excavation and levee projects. One predecessor entity, the S. W. Hardwick Company, had begun business in the 1920's. Throughout their respective existences, all of these entities maintained their principal offices in Beardstown, Illinois.

The Corps designed the Project in keeping with it past practices. The design was based on various types of hydrologic data, including Missouri River flood frequencies, the amounts of water which would likely require containment, precipitation and runoff from the hills to the north of the Project site and from farms adjacent to the Project, releases from upstream lakes which serve flood control functions for the Missouri River, river hydrographs, rating curves, soil borings, other hydrologic data and other standard design factors. These design factors, in the aggregate, determined such features as the location of the levee's centerline, height, width, slope ratio, the construction methods allowed, location and size of drainage structures, quantities of materials, haul roads and the location and size of borrow areas.

During the design phase the Corps determined that the Palmer Creek levee should be at a height lower than the Missouri River's north bank levee because such a design feature would allow a savings in dirt quantities and, thus, result in lower construction costs. The design accounted for lowering the Missouri River levee (part of the subsequent phases of L-246) to a 25-year flood containment height from a 100-year flood height. Also, during the design phase the Corps's Missouri River Division considered, but rejected for unknown reasons, an alternative design involving a ditch from Cut-Off Lake to the

river with a bottom elevation of approximately 611.5 feet above mean sea level (MSL). However, the final design and location of the levee was a compromise which gave consideration to the interests of the landowners and to other factors, including the availability of suitable fill materials and their location, foreseeable potential construction difficulties, economic factors such as the overall cost of the levee to the government, the amount of potential or existing fertile farmland that would be taken by the levee (if placed further to the west), possible interior drainage problems and the number of ditches that would be required with some other location.

The Corps's design carried the levee's centerline for a substantial distance alongside the western boundary of Cut-Off Lake. The lake was formed in the late 1880's as an oxbow lake when a section of the Missouri River shifted its channel. Generally, oxbow lakes such as Cut-Off Lake fill up over time with alluvium from the hillsides above them. These alluvium deposits tend to be clay soils while deposits from rivers during floods tend to be sand and silts which generally are not as cohesive in nature. Groundwater in a river valley usually migrates both with the river and toward the river, intercepting the river about the river's water level. In floodplains, materials are deposited and redeposited and in the process become "reformed" materials. They are not, however, homogeneous. Consequently, their deposition does not result in predictable layers of coarse and fine materials in the same areas.

The soils at the Project site have been reformed and some of the clays have been washed out of them making them more pervious and able to more freely transmit water from nearby or adjacent sources. Thus, the river at the Project site is, in essence, a "penetrating" river. However, the Project site was not unique

in this respect because all river floodplains have the same general deposition history and generally exhibit this same characteristic of relatively quick adjacent soil penetration.

Over the years of its study of this proposed project, the Corps had accumulated a significant amount of data to assist it in designing the levee including the following:

(1) *Old Missouri River maps dating from 1885.* Such maps were usually maintained in the Hydrologic Engineering Branch for purposes of studying the impact of navigational projects on the environment. These maps, showing the location of the old Missouri River channel, revealed that the levee's alignment, as ultimately located and designed, would pass directly over the old channel in some places. The Corps had survey data of the course of the river dating from 1879. These data showed that the lake was formed when the Missouri River cut through a large meander near Bushwhacker Bend. The Corps also had aerial photographs showing that, as late as 1945, there were low areas at the site corresponding to the old channel which had not yet been filled in by deposition and which still held water.

(2) *Piezometric study data.* Corps data showed the presence of a water-saturated piezometric mound under the lake. This type of mound is one which naturally occurs under lakes and drops off as the distance from the lake increases. It derives its name from the use of a particular instrument called a piezometer, a device hydrologists and geotechnical engineers use to measure the change of pressure of a material subjected to hydrostatic pressure. Thus, the device can provide useful hydrologic data for designing levees and similar projects. The Corps's piezometric study data showed that the piezometric

level under the lake is fed by the river and by Palmer Creek's flow into the lake. From this data the Corps knew that the mound would be almost flat in dry periods and higher in wet periods and that groundwater at the site would likely respond relatively quickly to changes in the water level of the lake, the river or Palmer Creek. However, there is nothing hydrologically unusual or unexpected about the presence of a piezometric mound under a lake. The effect of such a mound upon surrounding water tables will vary with the particular factors. The court notes that the Plans contained no representation concerning the existence of, or fluctuations in, the piezometric mound under Cut-Off lake.

(3) *Comprehensive precipitation and river volume data.* The Corps had developed rainfall data in the lake area as well as up-river. The Corps also had data relating to its own river releases from its up-river lakes, including Gavins Point at Yankston, S.D., and certain Kansas basin lakes whose levels were controlled by the river. These data suggest that if upper Palmer Creek exceeded its banks due to extremely heavy precipitation, such precipitation, independent of the river, could potentially flood the site. The Corps also had developed hydrographs showing river flows for a number of years pertinent to the job site.

(4) *Manuscript maps.* The Corps had surveyed some areas surrounding the site in 1964 and 1965 to establish vertical and horizontal controls for the purpose of photogrammetric mapping. It later established various benchmark points, or "ties," in connection with its instrument surveys of portions of the centerline of the levee. Thereafter, using photogrammetry techniques and state-of-the-art plotting equipment (all in accordance with its standard practice in designing a levee

project), the Corps prepared manuscript maps from aerial photographs. The contours shown on the maps were complete. Spot elevations established by surveys were also shown. The manuscript maps included buildings, rivers, bridges and other features revealed in the photos. No legend appears on these maps with respect to any particular standard of accuracy to be applied to the contours. Wind action, glare in the photos and trees along the lake's shoreline can contribute to contour inaccuracies. The Corps's plotter placed a question mark in one spot on the map, showed contours crossing over the centerline and used the lake surface as an elevation control point.[3]

(5) *Soil borings logs.* Most, if not all, of the Corps's approximately 68 soil borings were taken 10 years before the Project was to begin. The borings in the proposed levee's alignment (the foundation) were spaced 200 to 1000 feet apart. They were typical of the Corps's borings for comparable levee jobs and they were of the usual diameter and depth. The boring logs showed the types of soils encountered and the thickness

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3. One of plaintiff's experts, Rex Bradfield, testified that he examined the plan views and profiles, the manuscript map and the aerial photos and, using a Wild Plotter, found elevations which were in error as much as 3 1/3 feet. According to Mr. Bradfield, the applicable standard of accuracy was that no more than 10 percent of the contours should be in error exceeding one-fifth of two feet, which is the contour interval. He stated that when there is a "field measured profile," one would assume that the elevation shown is accurate to within one-tenth of a foot. He pointed out that the 620 contour follows the lake but in some places it disappears. Therefore, it is obvious that "it cannot be correct." However, the Corps's contour errors occur both ways. For example, in station 270 to 290, the plans show some areas as being under water. When properly plotted, those areas would not have been underwater according to the manuscript map.

of the layers of soils at identified locations. The boring logs showed that the top soil layers at key locations consisted primarily of fat clays with high liquid limits. Such clays are known to have poor construction characteristics because, when subjected to sufficient moisture, they become sticky and present difficulties in supporting construction equipment such as scrapers, draglines and dozers. Also, the boring logs showed, in various areas, nonuniform deposits of silts in varying thicknesses, occasional deposits of thin layers of clay over the silts and layers of sand. Thus, the boring logs contained various indications of the difficult, but not unusual, nature of the soil strata at the site and the potential for equipment problems during construction.

Additionally, the boring logs showed water levels measured 15 minutes after the extraction of each sample. No water level measurements were indicated later than 15 minutes after extraction. When soil borings are taken with mobile rigs and power augers of sufficient size to permit extraction of adequate dirt samples for analysis, if they do not penetrate into sand lenses or strata below the upper level clays, a boring will stand essentially dry for 10 to 15 minutes. Therefore, depending upon the size of the borings and the various soils penetrated by the borings, more time may be required to obtain an accurate reading of water tables. However, if the penetration is into a sand lense, little time is required for groundwater to rise to the maximum level it can reach in the bore hole. In such cases, taking borings after 15 minutes is adequate to obtain an accurate reading of water tables, even if the borings penetrate clay and silt layers before reaching the sand lenses.

In this case, some of the boring logs depicted high water levels in soils west of Cut-Off lake. About 19 of 32 borings,

taken at different locations and times, showed groundwater within five feet of the surface. Some of the Corps's borings indicated groundwater at or near 620 MSL. However, the Corps may have taken these particular borings immediately after flooding and, therefore, they would not have been representative of normal conditions. Conversely, they could have been taken during dry periods when water tables were abnormally low. Apparently, borings reflecting water tables at five feet or more generally would indicate an adequate foundation for moving equipment.

(6) *Additional hydrologic and hydraulic data.* Such data included rating curves, river flows over a period of many years down to 1977, Construction Reference Plane (CRP) data and river slope information correlated to the Glasgow gauge at Glasgow, Missouri. Hydrology is the study of water from the time it falls until it appears in rivers, lakes or oceans. Hydraulics is the study of the flow and control of water through structures. Thus, rating curves are a graphic form of hydraulic data. A rating curve depicts the elevation of a water surface compared with the discharge in some term of measurement, such as cubic feet per second, as it passes a given point at a particular elevation. The Corps's rating curves developed for this project graphically showed Palmer Creek discharges at various Missouri River flood heights after completion of the levee. The Corps, as a matter of practice, has never placed rating curve data in levee plans. Such data is only placed in plan documents for dam projects where lives below the dam are at stake and tighter controls are needed over water flows over the dam. The Palmer Creek levee was designed with two concrete structures with flap gates which provide adequate protection when lives and property are not at risk.

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Further, the Corps's records showed that at a flow of 2000 cubic feet per second in the Missouri River, which occurs once in every five years (usually in the period April to July), the Corps had a very limited ability to estimate crop damage at the site due to inundation. The Corps's records also showed that, perhaps because of the weir at the mouth of the lake, the lake would fluctuate in a narrow range. Thus, it recognized that the weir would prevent the lake from failing below its crest except for short periods and, accordingly, that the soils adjacent or close to the lake would not dry out as quickly as would more distant soils.

The CRP is a method or device developed by the Corps for designing navigation projects. The plane is an imaginary one established to provide a reference for designing and constructing rock-jetties, revetments and water diversion and control dikes within the river which help to use the force of the river to scour it and keep its channels free for navigation purposes. The CRP is based upon an established elevation and is related, pertinently, to the Glasgow gauge. The CRP document is kept in the Hydrologic Engineering Branch in the River Development Section. It provides vertical elevations from which distances and elevations of the tops of jetties may be calculated and fixed by the contractor. The Corps has only provided CRP data to contractors bidding upon "navigation type" contracts. However, since a levee job is distinct from a navigation contract, there is a lesser relationship between the CRP and the elevations depicted on levee plans.

Collectively, the Corps's data suggests that at about six or seven feet below its banks, the Missouri River could begin to back-flow into Palmer Creek. As the river level increased it could back-flow far enough to reach Cut-Off Lake and raise its

level. Corps studies showed that during the years 1970-1973 there were approximately 711 days in which no Palmer Creek discharge would have been possible. This fact was not disclosed in the Plans.

Using the CRP, the slope of the river, its flow charts and other related hydrologic data, the Corps had developed an inexact computerized model for assessing back-water effects, particularly with respect to bridges and static obstructions within streams, known as HEC II studies. Thus, the Corps possessed a methodology for making a correlation of the slope of the Missouri River to the Glasgow gauge from the proposed Palmer Creek discharge point at Missouri River mile 242, which the Corps had determined had an average slope of 0.83 feet per mile to the Glasgow gauge, and for making a rough estimate of the back-water effect in Palmer Creek.

(7) *Lake storage capacity, drainage and ponding data.* The Corps's files contained considerable data relating to precipitation levels, the water storage capacity of the lake, the need for two large concrete structures at strategic locations, and potential drainage and ponding problems at the site.[4] The

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4. In general, some areas are appropriately considered water surplus areas in that there is more water available than the ground can absorb or that can be evaporated. If over 0.5 inches of rain falls in a day, that amount below 0.5 inches will simply soak into the ground, and that amount exceeding 0.5 inches will run off. Almost the entire area of the Palmer Creek site is a water surplus area within this definition. Many highly variable factors determine the ground-water level in an area, including rain, evapotranspiration rates (the rate at which plants soak up and expel water from their leaves), and adjacent lake and stream levels. The Missouri River is a "penetrating river," as previously noted. (Cont'd)

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Corps's design called for two rather unusual control structures — unusual because they were designed to serve different purposes. The 400 structure was designed to store water when Palmer Creek was full. Thus, that structure's gate was designed to remain open to allow continuous discharge without any day-to-day control features. However, the Main Stem structure, which was considerably larger, was designed with automatic flap gates to prevent the river, when at higher than normal levels, from inundating adjacent or nearby farmlands. The District, which had responsibility for planning and providing interior drainage (*i.e.*, the provision of ditches to the levee structures in the natural flow ways) did not have a formal drainage plan for Palmer Creek. Drainage, historically, had always been located simply where it was "likely to go." However, suitable ponding areas were recognized as needed landside of the proposed levee to accommodate run-off until the run-off could pass through special corrugated metal pipe (CMP) structures in the proposed levee. The Corps designed the Project's drainage structures because the District had no ability to do so. The design of drainage features for specific locations is not irrevocably fixed and, therefore, such designs are subject to change as the work progresses. In fact, the Corps expects that some of its designed drainage structures will have to be relocated, even after commencement of work. This is normally treated as a minor undertaking involving only a "field adjustment" during construction.

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It travels easily through its bed because it has penetrated, by erosion, through the existing layers of clay soils. Also, its bed is sandy, which allows more immediate flow of water into surrounding areas, particularly when river levels are high. Obviously, the more distant a site is from the river, the slower is its groundwater response to flooding.

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(8) *The General Design Memorandum (GDM).* The Palmer Creek GDM was prepared about July 21, 1971. This document is one of the Corps's standard documents which it routinely develops for river levees and similar projects. The GDM usually contains technical information which the Corps regards as not necessary for contractors to have for purposes of accurate bidding of the job, but necessary for the proper design of the levee. Thus, as a matter of practice, the Corps does not include the GDM among the contract documents. However, the GDM is needed in determining the best possible location of the levee, fixing its slope, selecting borrow sources, determining quantities, setting the height of the levee, estimating potential drainage problems, providing for adequate drainage structures and estimating the protected acreage of farmland.

The Palmer Creek GDM described an earthen levee approximately nine to 10 feet high with berms located in areas where the clay blanket in the foundation of the proposed levee was thin. The GDM further provided special detail for those areas where the levee was designed to cross two arms of Cut-Off Lake and low swampy ground and stated that Cut-Off Lake's existing normal water level "varies between 618 and 620 feet above mean sea level." Although the Corps, using later-developed data, subsequently made many changes from those shown in the Palmer Creek, GDM in drafting the Plans (which came about from the review comments of various divisions and branches within the Corps), the GDM, in general, contained much of the basic information needed for the design of the levee.[5]

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5. Some of the information in the GDM was preliminary. For example, the Corps's summary of the quantities in 1975, based upon the topographic data before the centerline surveys were taken, showed that

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(9) *Advance or First Draft of the Plans.* This document consisted of an initial set of contract drawings using the data taken from the GDM. Normally, the Corps circulates this set of preliminary plans to the various concerned Corps divisions and sections, including the Engineering Division, the Soil Section and the Hydrology Section, for comments and proposed changes. The Palmer Creek advance plans resulted in a design change — raising the height of the levee — based upon rating curve data developed by the Hydrology and Hydraulic divisions within the Corps in 1972 and in 1974 for Palmer Creek at its discharge point into the Missouri River at mile 241.8. Other proposed changes involved the addition of ziptoning to show water in the lake area, establishment of different alignment points and curvature information (the final Plan alignment was changed from the GDM to tie into the existing levee), location of the 26 drainage structures, the ARCO pipeline crossing, the borrow areas, the existing levees, additional water surfaces, soil classification data, a larger scale including a blowup of the 400 structure, typical area fills and boring data, which in this case included the Atterberg limits (up to five feet in depth but not below that level), the soil designations and the water levels in the borings (the borings used the topographic contour levels for the tops of the borings since many were not taken in the centerline or close to the survey points). The Corps also

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approximately 809,400 cubic yards of material would be required for the levee. However that estimate, as shown in the GDM, was based upon a flat surface to get a quick estimate of quantities along the levee's alignment. Later, using more accurate information (the centerline survey, cross sections and spot elevations), the Corps increased its quantity estimates by adding 22,025 cubic yards for the area fill, 75,540 cubic yards to the berm fill, for a total of 939,343 cubic yards, and increased the total amount for stripping to 69,134 cubic yards.

eliminated duplicative data relating to the borings. However, it eliminated some of the contour lines in order to insert what it considered to be more needed data including notes on the plans which otherwise would not be legible when reduced in size.

Some review comments respecting the advance plans indicate that with groundwater control the Corps's designers thought that the designated borrow areas numbers one and two would be adequate. For example, at about RB station 309 scrapers could be used along with a haul road, but operations from borrow area number 2 would require the use of draglines, a causeway and trucks. Unfortunately, the Corps destroyed all copies of its advance plans. These comments, which were found in the Corps's records during plaintiff's discovery, indicate that there was disagreement within the Corps as to the adequacy of the designated borrow areas. Some commented that these areas "looked poor." One comment was that borrow area number 3 was "marginal" because it contained soft, low strength Class II material which is not good foundation material for a levee.

Immediately prior to completing its final Plans for the Project, the Corps performed a "constructibility review" of the Project. This review involved a site visit, evaluation of both the Corps's and the contractor's quality control procedures, potential management or compliance problems and final revisions to the Plans. Once this work was completed, in accordance with standard practice, the final set of Plans were then reduced by one-half, trimmed and bound, checked again, circulated one last time for comments and final revisions and then made available for bidding.

In this review process the Corps omitted some, but not all, of the swamp symbols that had appeared in the GDM. In other

areas a few swamp symbols were erroneously shown in dry areas. In any case, in the more critical areas near RB station 299 east of Cut-Off Lake, swamp symbols as shown in the GDM were similarly shown in the final Plans. Since the advance plans were never found, the record does not show what those plans contained or how they varied from the final Plans. Also, it is not known exactly what data the Corps used in preparing the final Plans. However, in the process, in accordance with its standard practice, the Corps first placed contours (derived from aerial photographs and photogrammetric techniques) and other data on the relevant drawings and then superimposed cross section, levee alignment, borrow and soil boring data on the drawings. The boring data did not show all boring information which the Corps had developed, but it did include soil classifications, most 15-minute water levels, and data showing the liquidity and plasticity of soils, among other things.

The Plans also described stations along the levee. These stations helped to locate the levee in relation to the lake, the borrow areas and the various structures. A station is a measurement that is 100 feet long. The Plans indicated that the right bank levee started at station 122 + 95 and went to station 500 + 55 near the Missouri River, and that the left bank station started at 122 + 00 and went to 495 + 13.4 at the outlet ditch below the concrete structure at the Main Stem structure, the ending station. The Plans required clearing approximately 306 acres. Of that amount, 260 acres were required for right-of-way and approximately 46 acres for designated borrow pits.

The Plans showed only three points at 622 MSL or less by contour lines. These particular contours appear along the west side of Cut-Off Lake where the Corps's Plan topography intersects the Plan profile. The average variation between the

Corps's Plan and profiles for these points (which were produced by actual surveys), is 1.06 feet or very close to the one-foot standard of accuracy, one-half the two-foot contour interval, which is often applied to contours. Well over a majority of the contours shown on the Plans were within the one-foot standard of accuracy.

The 620 contour line, as it appeared on the manuscript map, contained a question mark without explanation. However, the Plan's 620 contour line did not show a similar question mark. The Plan's 620 contour line was shown as crossing over a rock weir or small dam. The Plans specified that this weir was to remain in place. (Hardwick's later survey determined that the actual height of the weir is at 618.5 MSL.) The weir was built in the early 1970's to permit better control of the lake's level. The weir was designed for a height of 618.5 MSL. However, someone later added a hinged door (possibly to benefit water fowl hunters) which, when lowered, effectively raised the lake's level by about one or two feet, or to approximately 619 or 620 MSL. Some residents in the Brunswick area knew that when the lake was at 619 MSL or above, fields adjacent to the lake would not readily drain.

The Plans also contained hydrologic, hydraulic, precipitation, Missouri River hydrographs and other data relating to the Palmer Creek area. However, the Plans gave no specific indication of back-water frequency and duration for particular areas that might be the most affected. The Plans clearly showed swales, or irregular surfaces, in certain areas. Swales are an indication that ponding can occur in low areas particularly when an existing drainage way becomes plugged. However, these low areas cannot be precisely identified from the Plans. The GDM and other internal memoranda and

correspondence recognized the possibility of ponding in areas adjacent to the levee. However, with this Project, the Corps did not require that the District obtain ponding easements from the affected landowners (the Corps made the District responsible for damage to landowners due to ponding beyond the areas obtained by easements). Thus, some ponding areas, which otherwise would have required easements from the landowners, were omitted from the Plans due to the agreement between the Corps and the District.

The Plans provided for a number of interior drainage ditches and CMP structures. The Corps located these ditches and CMPs by reference to existing drainage patterns. Although the Plans did not clearly reflect the possibility that such drainage ditches and structures might require modification — *i.e.*, being raised, lowered or moved to another location — at additional cost to the contractor, such modifications are usually necessary in building Missouri River levees because there can be no assurance that the drainage patterns will remain the same once the levee is built.

The Corps's field survey notes, completed in 1975, contained some lake levels — 620.92 MSL, 621.24 MSL and 620.9 MSL — at three different right bank stations on the levee. However, no dates were shown. The Plans did not represent that the lake levels would never exceed 620 MSL. In fact, the lake levels shown on drawings A-4 and A-8, measured on June 24, 1970, were 619.5 MSL and on drawing B-6, measured in March 1971, were also 619.5 MSL. The GDM of July 1971 stated that the existing normal lake level varies between 618 to 620 feet above MSL. This fact indicates that during the design phase the Corps may have assumed that 620 MSL was the height of the weir and perhaps the normal height of Cut-Off Lake. In

any event, by agreement with local interests, the Corps determined that a minimum desirable lake level should be maintained during construction. The level the Corps chose was 620 MSL.

The Corps attached hydrographs to the Plans showing daily elevations on the Missouri River at the Corps's Glasgow gauge (at river mile 276.3) for the years 1929 to 1976. However, the Plans did not show any hypothetical runoff data developed for the individual drainage areas at the Project site.

The Plans showed the course and elevation of Palmer Creek as it existed prior to commencement of construction. For example, the Plans showed a variance from 613.5 MSL approximately 2000 feet north of the old mouth of Palmer Creek to 617.0 MSL approximately 5000 feet south of the outlet for the lake. However, the Plans omitted the rating curves (graphs of the water surface elevations of the Missouri River at various flows) for the point of confluence of Palmer Creek with the Missouri River (mile 241.79), the plotted water surface profiles at various Missouri River stages from the Glasgow gauge to Palmer Creek, the correlation data relating to Missouri River elevations at the Glasgow gauge and river elevations at the site, the 13.8 foot average water surface elevation (for the twelve-year period from 1964 to 1976) at the Glasgow gauge and the capacity of the Missouri River at the mouth of the new channel of Palmer Creek (where it was to be relocated upstream) which the Corps had estimated pre-bid to be 160,000 cubic feet per second (c.f.s.) when the river was at flood stage (624 MSL), as fixed at the Glasgow gauge.

The Plans made no reference to the need for stability mats in connection with the possible use of draglines. Some mats

can be made at the job site using available logs lashed together with cables. However, more stable mats made of oak timbers fastened with cables and clamps and fitted with special long timber spikes require more time to make and are more costly. Both types of mats are primarily used as a base for dragline operations under wet soil conditions and require that the dragline operator move the mats into position to support the dragline when it is being moved.

The Plans required that embankment material be placed in two-feet-thick, 500 linear feet reaches with a 15 percent over-build, except around the concrete structures. The over-build is to allow the levee to settle over time into the proper configuration. Accordingly, the additional fill material was required to be placed on the top of the levee and sloped down to the toe of the levee on each side, but to the same base dimensions. Thus, inherent in this particular design is some degree of initial structural weakness because this requirement necessitates steepening the slope. However, that effect is diminished as the levee settles.

The contours shown on the Plans were incomplete because of obliteration caused by the superimposition of notes and other written information on certain Plan drawings. This obliteration occurred in areas of the job site which were both critical — *i.e.*, having low elevations — and noncritical.

The Plans omitted reference to maps showing the location of an old Missouri River channel that existed before Cut-Off Lake was formed in the late 1880's. Some of these old maps were in the Corps's files when the Project was advertized for bids. However, the Plans did refer to the possible presence of a sunken river boat in one of the borrow areas.

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The Corps's field survey notes contained some boring data, including blow count data, that was not in the Plans and revealed additional swampy areas other than those depicted on the Plans. The notes also contained references to higher lake levels than were stated in the Plans and to adjustments respecting survey control points. Written notices of the availability of the notes were sent to bidders approximately one week before the bids were due. The Corps amended its pre-bid information by mailing to prospective bidders on April 20, 1977, a note stating that field survey notes were referenced as being available for examination upon request. However, Hardwick did not receive its notice until approximately two working days prior to the bid due date. None of the bidders examined the field notes or sought a postponement of the due date to permit a reasonable time for examination of the notes. Neither the notice nor the field notes contained any representation or warranty of accuracy or correctness.

The Plans contained warnings of potential job-site wetness and the weak nature of the soils in some areas. For example, they revealed that the job site was close to the Missouri River, the lake and Palmer Creek; that the respective water levels of these bodies could fluctuate; that the Missouri River levels were subject to great variations due to many factors as shown by hydrographs; that the lake elevations (as of June 24, 1970) were noted; that the Plans gave the contractors the uncompacted fill alternate (indicating that excessively wet soils are to be expected); that the site showed a very flat topography, substantial portions of which were between the 620 and 630 contour intervals; and that Palmer creek was shown as flowing through the job site (with only a 10 to 30 foot width and shallow U-shaped banks) with all of the flow, at one point, directed into the head of a lake having at its mouth a restrictive weir.

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By 1976 the Corps's advance plans and specifications had already been prepared, but the Project was on hold until funding was obtained. This funding became available in May or June of 1976. Therefore, the Corps gave notice of the Project in January 1977. On March 14, 1977, the Corps, on behalf of the United States of America, formally advertised the Project for bids identifying it as "Levee Unit No. L-246 Project, Stage I. Invitation For Bid ("IFB") No. DACW41-77-D-0055." The IFB contemplated submission of a fixed-price sealed bid for performance of the work on the following basis for the major work items: a lump sum for the clearing and grubbing; unit prices, extended for estimated quantities in cubic yards set out in a bidding schedule provided by the government for levee fills and excavation; an amount based upon linear feet for the CMP to be used in various structures; the amounts, in cubic yards (cy's), for concrete and pounds of reinforcing steel for the two reinforced concrete boxes and also for the riprap and other rock materials. Further, the work was described as follows: building approximately 14 miles of earthen levee embankment (est. 949,800 cy) along the left and right banks of Palmer Creek above Cut-Off Lake; constructing a levee around portions of the lake, primarily along the west side, along the right bank of the creek and below the lake and down to the Missouri River's left bank levee; excavating approximately four miles of new channel for portions of the creek, both above and below the lake; constructing two large reinforced concrete box culverts, one designed with automatic flap gates, for operation of comprehensive flood control systems (one at the mouth of the lake at about Station 400 — the 400 structure — and one where the creek was to be redirected to empty into the Missouri River at about Station 500 + 50 — the Main Stem structure; placing 18 CMP's through the levee at various locations for interior drainage; and placing slope protection material (riprap) around

various structures. The Plans showed that the levee when completed would vary in height from seven to 14 feet depending on existing ground elevations.

During the six-week period from March 14, 1977, to bid opening on April 27, 1977, Hardwick representatives obtained and reviewed the bidding instructions, studied the Plans, visited the job site, interviewed local residents, prepared "take-off and quantity estimates" and determined to submit a written bid for the project. Hardwick made two site visits, the first on April 11, 1977, and the second on April 23, 1977. Ted Hardwick, Golie Hardwick and Deneen Hardwick all visited the site during one or both of those two visits.

Deneen Hardwick, during his site visits, examined areas to be traversed by the levee, estimated the amount of timber that would have to be taken out, estimated the size and suitability of the designated borrow areas, determined the amount of trees and brush that would require clearing, viewed the areas where the main concrete structures were to be placed, took soil samples using a two-inch hand-held dynamite auger (so called because it is also used to drill holes for dynamite sticks), tested the stability of the soil at various locations using a small pole five to six feet in length, viewed the old levees to determine the amount of material available in them, estimated the distances required for operating scrapers, appraised the adequacy of the area's drainage, estimated the flow in Palmer Creek, and, based upon the contours shown on the Plans, generally attempted to judge the height of the levee in relation to the surrounding area.

Deneen Hardwick also discussed the Project with a number of local residents. He talked with Charles Manson, a former

employee who had worked on similar jobs and was later hired by Hardwick to work on the Palmer Creek job. Mr. Manson, who was also a farmer, was very knowledgeable about conditions at the site. At the time Mr. Hardwick talked with him, he was serving as a Commissioner in the Brunswick-Dalton Drainage District and, thus, was in favor of and had long known about the proposed levee. In fact, it was Mr. Manson who first informed Hardwick of the availability of this work. Mr. Manson testified that he actually knew that the slope of the river from the mouth of Palmer Creek to the Glasgow gauge was approximately one foot per mile and that a reading of approximately 18 or 19 feet at the Glasgow gauge would flood the creek all the way up into Cut-Off Lake, even though the stated flood stage (which would overflow the Missouri River levee at Palmer Creek) was a reading of about 24 at the Glasgow gauge. Mr. Manson knew about potential wetness problems at the site from his personal observations during prior years. However, Mr. Manson was not asked about and, therefore, did not discuss these matters with Deneen Hardwick prior to Hardwick's bid.

Also, Deneen Hardwick talked with Frank Parker, another area resident and former Hardwick superintendent. Mr. Parker was also familiar with the Palmer Creek area and, if asked, could have advised of potential wetness problems at the site of the proposed levee. He, too, was not questioned by Mr. Hardwick about these matters. In fact, Mr. Hardwick did not question any local residents about the slope of the river or possible effects of heavy rains and Missouri River floods on Palmer Creek or the job site.

Although experienced in earth work and in estimating levee jobs, Deneen Hardwick had difficulty during the site visits in

correlating Plan data to exact locations. Although he noted that at two locations the levee would be required to cross two arms of Cut-Off Lake, he concluded that any crossing problems could be handled simply by placing a blanket of dirt down at these locations using small scrapers. Mr. Hardwick also noted that Cut-Off Lake levels, according to the Plans, were shown at 620.5 MSL near the rock weir and that farming operations existed on both sides of the proposed levee right of way, which he thought would not be possible ordinarily if the site historically was extremely wet.

At the time of submitting its bid, Hardwick had adequate capital, an excellent credit rating (it had never been refused bond coverage for its jobs), adequate equipment in relatively good condition and experienced personnel with expert knowledge in performing levee work in floodplains. In addition to the Hardwick family members identified above, its experienced personnel included Alan Haberman, a partner in the firm; Joanne Haberman, Alan's wife, who handled some bookkeeping and administrative functions; Lloyd Ferguson, a project engineer; Grover Rodgers, a project superintendent; Jim Myers, a civil engineer; and Clarence Morning, also a project superintendent and an experienced dragline operator. Except perhaps for Charles Manson, who at the time of submission of the bid was not a Hardwick employee, most of these personnel were listed on Hardwick's report to the Corps dated April 30, 1977. That report also included an equipment list.

Hardwick priced its bid on the compacted fill construction method which contemplated the use of rubber-wheeled tractor scrapers and dozers for placing most of the fill materials. Levee construction with this method requires that the levee must achieve at least a 90 percent compaction rate on a standard

proctor test (generally obtained by using special compaction equipment such as sheep's foot rollers). Thus, compaction tests are routinely taken during construction. However, when a levee job is bid on the basis of the uncompacted fill alternate, most of the placement work contemplates using draglines, dump trucks and dozers. This second method allows for dragline placement of excessively wet materials directly on the levee. Because Hardwick's bid was on the basis of the compacted fill method, approximately 20 percent of its bid price was based upon discing and rolling the fill. Also, it's bid contemplated the use of the designated borrow areas in the Plans, rubber-tired scrapers (Terex models 14's and 18's having twin engines for push-pull operations and floatation size tires), an average scraper haul of approximately 3500 feet from the designated borrow areas, an average of five scraper loads per hour, D-8 size bulldozers in the borrow areas, a D-6 size dozer on the levee to spread fill and a six-inch pump on a cart with its own motor to dewater the 400 structure, and, because of the requirements of the Plans for a greater structure at the 500 station and a larger dewatering effort, a system of well-points for dewatering at that location.[6]

Hardwick's bid did not allow for the use of stability mats for dragline operations because it concluded that by using low ground pressure dozers, which can operate in wet soil conditions, such mats would not be needed. However, even low ground pressure equipment may need stability mats to operate if conditions are sufficiently severe.

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6. A typical cross section was shown for this alternate on Sheet B-1 of the Plans. From the location and size of the designated borrow areas shown on the various contract drawings, bidders were expected to determine what equipment would be needed, the haul distances, the quality and quantities of materials to be obtained and, if dewatering was indicated as necessary, the costs of such dewatering.

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Hardwick noted that the Corps had approved five material sources for the riprap, all of which were within close proximity to the job site (the average distance was only 15 miles). Thus, Hardwick's bid was based upon a delivered cost of $7.10 per ton. It did not, however, contract with any supplier at the time of making its bid to assure that the approved riprap would be available when needed. Further, its bid contemplated moving approximately 813,000 cubic yards using an average of nine operators at $11.70 per hour for the earthwork at an average cost of approximately $1.25 per cubic yard (for all fill materials).

In sum, Hardwick's bid considered numerous relevant factors including site conditions, available equipment, its financial condition, its work in progress, its other work under contract but not begun, the distance of the job from its home office, potential mobilization costs, potential overhead costs and its own related experience. Hardwick based its estimate of the average scraper haul upon the location of the borrow areas, their condition as noted during the site visit and the available rights of way.

Hardwick's bid required about four weeks to prepare and was hand-carried to the Corps in order to assure meeting the April 27, 1977, deadline. Its total bid for all of the work was $3,066,915.

Prior to advertising for bids, the Corps usually estimates what it considers to be the approximate costs of performing the work in order to determine whether the bids it receives are reasonable and within its projected budget for the project. Ordinarily, if the bids the Corps receives are not within the range of its reasonable estimate, a project must be reassessed

and perhaps redesigned to lower costs. In such case the Corps will not allow a levee construction project to go forward on the advertised basis. Thus, the Corps's reasonable estimate helps to assure that the government is getting a fair contract price.

In general, the Corps attempts to have its estimate fall between the second and third lowest bids, assuming a 10 percent profit is allowed for the contractor. Its estimate takes into account numerous factors, including the specified contract period; the number of weather days allowed for the work; the equipment selected; the requirements set forth in various manuals; historical data; previous jobs; the Corps's expertise; information in its files; and any relevant formal job training of its personnel, including training in preparing such estimates.

Some Corps personnel involved in inspection at the site had never before been involved in a project using the uncompacted fill alternate. That alternate was not included in the Corps's advanced plans. When the Corps added the uncompacted fill alternate, it also changed the related three-foot lift thickness requirement to a two-foot lift thickness requirement. This change was done after the Project was advertised for bids based upon the internal comments of Corps personnel, the Corps's experience with the uncompacted fill alternate and its desire to potentially achieve a lower construction costs resulting from that method of construction.

The evidence shows that the Corps's estimate was based upon various assumptions — that the compacted fill method of construction would be used, that the contractor would experience relatively normal weather and normal river conditions, and that approximately 35 percent of the work would be done by draglines and dump trucks while the remaining 65

percent by scrapers. The Corps also contemplated using "sheepsfoot rollers" for compaction of the fill, a water truck, haul roads from the designated borrow sources, dozers and other equipment.

The Corps's projected quantities were based upon the use of large scrapers (model TS-657's) having rated load capacities of 32 cy "struck," or level, and 44 cy "heaped." The Corps also used a "swell" factor for wet clay to get the amount of "loose" (uncompacted) cy that would normally be transported. Thus, the Corps estimated that approximately 18 percent more loose dirt would require transportation to the levee site than if the dirt was in its natural and more compacted state.[7] Although the Corps improperly included some minor items, such as lab facilities, fencing and buildings, deleting these items would not have materially lowered its reasonable estimate.

The Corps's estimate was also based upon its manuscript maps (containing contours and surveyed elevations), the GDM, field notes, site visits, Missouri River hydrographs, past flood levels, records of precipitation in the area, and the particularized and expert knowledge and experience of its Kansas City and Glasgow office personnel. Although the Corps did not base its estimate upon the use of draglines as the job was ultimately

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7. The Corps maintains that it lost its worksheets for its quantity calculations. However, Mr. Bateman, the Corps official who did the Corps's quantity calculations, stated that he saw no discrepancies in the contours and that in making his computations he had "assumed" that the contours as shown on the Plans, and in more detail on the manuscript map, were correct. Further, he stated that he did not examine the survey notes or the data regarding Cut-Off Lake levels or consider any swamp symbols but that he did increase the amount of water shown on the Plans over that shown in the GDM.

performed by plaintiff, it did conclude that at least one-third of the material would be too wet to be hauled with scrapers and would have to be top-loaded by draglines and hauled by dump trucks, that it would be necessary to maximize the number of hours worked during the drier time periods, that overtime should be allocated to work extra hours during expected dry periods, that wet job-site conditions would limit the amount of material that could be hauled per scraper load, that conditions would limit the average load to approximately the minimum rated load capacity of the scrapers to be used on this job, and that loading and unloading wet materials, because of adhesion, would require added handling time.[8] The Corps's estimate for the Project, based upon the foregoing factors, was $3,137,725.

On April 27, 1977, sealed bids were opened. Hardwick was the apparent low bidder at $3,066,915. All other bids were substantially higher than Hardwick's and List & Clark's bids, as well as the government's reasonable estimate.

On May 27, 1977, the parties entered into Contract No. DACW41-77-C-0126. The Contract included standard provisions relating to changes made by the Contracting Officer, differing site conditions, materials and workmanship, inspection and acceptance, superintendence by contractor, conditions affecting the work, site investigation and special provisions relating to commencement, prosecution and completion of work, physical data, damage to work, site work, groundwater control, requirements for fill placement and compaction, uncompacted fill alternate, settlement of foundations, slides

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8. The Corps's estimate allowed for a delivered cost of $6.48 per ton for the required riprap materials. It was based on a 25-mile average haul and also, as did Hardwick's cost estimate for this item, it included material and handling costs for transporting riprap materials to the job site.

and placement of concrete. Hardwick received its notice to proceed on June 9, 1977.

Section 2A-4 of the Contract, entitled "Plan of Operations," required that Hardwick submit an overall plan of operation for the Project within 10 days after notice to proceed. Hardwick, by letter dated June 13, 1977, written by P. M. Rayback, submitted a progress chart for the Corps's consideration and approval. Thereafter, Mr. Rayback enclosed an outline of Hardwick's plan of operations with a letter to the Corps dated July 12, 1977. That letter noted that after negotiation of subcontracts for the concrete structure's and drainage structures, the contractor would submit the plan of operation for such structures as a supplement.[9] By letter dated August 11, 1977, Hardwick submitted a revised proposed progress chart for consideration and approval. By letter dated August 29, 1977, John P. Elmore, the Corps's Chief Inspector and designated representative of the Contracting Officer, gave notice of approval of Hardwick's overall plan of operation. Similar plan letters from Hardwick were sent to Mr. Elmore at various times covering facets of the work including clearing, trash burning, grubbing, burying of stumps, stripping, fill placement and channel excavation, construction methodology and the like. The first construction operations Hardwick performed after mobilization consisted of clearing, grubbing and stripping work.[10]

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9. The Contract required that prior to construction the contractor's plan to build the two large concrete drainage structures (the 400 structure at the mouth of Cut-Off Lake and the Main Stem structure at station 500) be submitted in written form to the Corps for approval.

10. Grubbing consists of removal of tree stumps, brush and other debris much of which must be pushed or pulled out of the right of way. Stripping consists of the removal of up to six inches of topsoil to expose the foundation or levee base before placement of fill.

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Although the Corps criticized Hardwick for not immediately pushing debris into piles to increase the drying time of the soil underneath, Hardwick's practice of not creating large piles of debris facilitated its operations by allowing rain to wash dirt from the stumps so that they would burn more easily. Further, Corps inspectors criticized Hardwick for pushing limbs in the foundation which might cause small holes which might collect water. However, Hardwick viewed these criticisms as minor matters and nothing more than Corps nitpicking. In an effort to save Hardwick time and money, the Corps agreed that, after stripping, Hardwick would not need to perform surveys for later computation of quantities as required by the Contract. Accordingly, the Corps agreed to base payment on 3/10 foot of material.

Hardwick's equipment, although much of it was used, was in fair-to-good condition when it was mobilized for the Project. Hardwick promptly scheduled equipment for repair when it broke down and consistently performed routine maintenance during construction. During the early months, but after severe weather had begun, Hardwick's equipment frequently required repairs.[11] At one time, Hardwick had to have dozer engines rebuilt at costs exceeding $5,000. Repair costs of one low ground-pressure dozer amounted to approximately $15,000. The dragline booms sometimes needed repair as well. However, the large scrapers, the Terex TS-18's, needed less repairs because

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11. Although Hardwick's equipment, generally speaking, was in good shape when it was delivered to the job site, due to the severity of the work and the wetness of the job site, some items of equipment required considerable maintenance and some required overhaul or extra repairs including undercarriages, tracks, chains, rollers, idlers, sprockets, sway bars, transmissions, cutting edges, piano hinges, tires, bottoms and bowls and various moving joints.

they were almost new when delivered to the job site. Although most of the repair work was done at Hardwick's headquarters in Beardstown, Illinois, some field repairs were required. In sum, the type, location and total cost of equipment overhaul and repair work which Hardwick performed, largely depended on many factors including the weather, the relative difficulty of the repair work, the time involved and the experience and skill of the repairmen.

Hardwick mistakenly excavated for certain drainage structures before taking original cross sections as required under the Contract. However, both parties regarded this as a minor oversight. Further, although Hardwick operators occasionally knocked down wooden stakes or temporary bench marks, which must be securely placed out of the way of the equipment to direct the operators in their work, these stakes were promptly replaced by Hardwick. However, Corps inspectors criticized Hardwick for not placing sufficient stakes on the berms, on the various types of fill and at the toe of the levee, which required at least a five-foot offset.

As a general rule, Hardwick successfully hired qualified equipment operators. Thus, Hardwick had no significant labor problems on the Project. In fact, all of Hardwick's employees knew one another and worked well together. For example, even when Hardwick faced abnormal ice conditions during winter clearing operations, with its competent and motivated operators it was able to maintain high productivity levels. Hardwick dozer operators once performed difficult bridging work by pushing sand fill into the lake crossings. Although at one point this caused impoundment of water on the land side of the levee, the problem was promptly and adequately remedied. Partly because of the skill of its operators, Hardwick effectively used

wide-track or floatation dozers. Such equipment was especially effective in wet areas to free stuck equipment and clear ahead of the 200W dragline.

When good material was available, Hardwick only needed to make one or two dozer passes on each lift in order to reduce individual loads and eliminate any "large open voids" (as required by the Contract) before placement of the next lift. However, Corps inspectors sometimes required Hardwick's dozer operators to scarify the surface of the levee after completing placement of a lift to assure bonding of the next lift. Additionally, Corps inspectors sometimes required dozer operators to keep working the lifts by making extra passes until they were satisfied that the last lift was sufficiently solid or compacted to allow placement of the next lift. The material on occasion was so poor it was akin to clabbered milk, thereby requiring dozer operators to push the wet material up from the sides of the levee to keep it properly shaped. Often, when conditions were particularly bad, Hardwick operators could find no place for the water to drain naturally from the levee site. For example, water could not drain into Cut-Off Lake or into Palmer Creek when they were at high levels. Also, under these extra wet conditions, Hardwick had no place to pump ponded water alongside the levee.

Although, initially, Hardwick's work was not substantially delayed by wet weather, when wet conditions occurred, first beginning in late summer of 1977, the clearing, grubbing and stripping operations were significantly delayed and, in fact, these preliminary operations required about one year to substantially complete. Hardwick experienced the most difficulty in such operations west of Cut-Off Lake between RB stations 240 and 400 because of a combination of wet conditions

and the presence of soft soils. These conditions provided weak support for scrapers and dozers. Also, Hardwick often had to both push and pull scrapers out of the designated borrow areas once filling operations began. Further, dozer operators, during the preliminary clearing operations, often had to push timber out of 12 to 18 inches of water and contend with pumping of water in the levee foundation area due to moisture underneath the surface. Rutting and pumping caused by the tires of the scrapers and the tracks of the dozers, were also a serious problem during early operations, until the levee had been built up several feet.

The first clearing work was done near the Missouri River but high water forced Hardwick to halt this work and switch to working above Cut-Off Lake, where some clearing could continue. At that time Hardwick also performed some surveying and staking of the levee work in preparation of placement of fill. Later, during filling operations, Hardwick, within its discretion, often chose to dress or seal the top of the levee using a dozer blade rather than a rubber-tired roller. Sealing is necessary to prevent rain water from penetrating into the levee and weakening it during construction.

On September 14, 1977, some of the worst flooding in Missouri River history occurred.[12] That flood raised Missouri River levels to such heights that much of the Palmer Creek job site was inundated. During this period of unusually high water, Palmer Creek could not discharge its flow into the river.

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12. This flooding was called the Plaza Flood because a wall of water descended in Brush Creek (an upper tributary of the Missouri River) and tragically killed a large number of unsuspecting people on the Alameda Plaza in Kansas City, Missouri.

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Hardwick complained to the Corps that severe flooding in the Missouri River and Palmer Creek had deposited some quantities of silt, grass, mud and other debris on the job site. Sometimes no removal of debris or redressing of the levee could be done until water levels had receded. The Corps rejected Hardwick's claim under its interpretation of the Contract. Thereafter, Hardwick made the repairs at its own cost. However, at that time Hardwick did not pursue the matter by submitting a formal claim for damage to completed work under the Damage to Work clause of the Contract.

In September and October 1977, at the instigation of Paul Whaley, density tests of soil samples taken from the levee were performed to determine the degree of compaction being obtained. The Corps usually establishes a Proctor curve as a preliminary step to performing such tests. Thereafter, it uses the "sand cone method" to determine the density achievable at specified moisture levels. The Corps performed these tests upon samples taken from stations west of Cut-Off Lake. The Corps found that Hardwick's operations were resulting in approximately 90 percent compaction of the fill — well within specification requirements. In fact, a rate of 90 per cent is usually obtained only when the compacted fill method is used.

During the remainder of 1977 and in early 1978, extremely wet conditions continued and disrupted the orderly progress of the work. In fact, at times fill placement was exceedingly difficult, if not impossible, except in limited areas where equipment could gain access to the job site. Some work around Cut-Off Lake was done when the ground was frozen. Casting with the draglines was particularly difficult in some areas because of the lack of dry places to allow the dirt to drain or dry out. Even with use of dirt from the existing levee between

stations 400 and 450, wet conditions often required that the scrapers haul only half loads. Moreover, fat clay soils acted as a moisture barrier and held the water "like a bowl." Thus, extraordinary preparation sometimes was necessary.

Once dragline operations began, Hardwick often had to handle the same loads of dirt four or five times before casting onto the levee, to facilitate drying. Sometimes the draglines were the only machines that could get near enough to the dirt to work it. Also, the dragline operators frequently had to use specially made timber stability mats to avoid getting stuck when moving the draglines. These mats, were about 5 x 20 feet and functioned much better than log mats made from timber cut at the site. They were usually placed ahead of the draglines when the draglines were being moved over wet or saturated soils. The need for mats significantly slowed Hardwick's production.

Hardwick's implementation of a long-range plan of operation was impeded by daily changes required in its operations stemming from the recurring Missouri River flooding and high water conditions. On occasion few dry places existed in which to work. In fact, Hardwick had only 58 days when work was feasible during the 1977-78 season. Also, at times, Hardwick encountered operating problems due to snow and ice.

At one point Hardwick was prevented from doing an adequate and timely plan layout due to high water. Also, after the work areas had been properly staked, high water levels often caused these stakes to float away thereby requiring time-consuming replacement work. Hardwick was required to provide the Corps with progress charts indicating the work accomplished pursuant to the plan. The Corps sometimes delayed in approving these progress charts until it was satisfied as to their accuracy.

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After experiencing very wet conditions from high water levels which inundated various parts of the job site and caused operating inefficiencies, Hardwick concluded that Cut-Off Lake had to be lowered to obtain a sufficiently dry site to build the 400 structure. Additionally, Hardwick determined that a diversion ditch, ring levee and approach channel would be needed during the construction of the 400 structure.

The events which thereafter occurred in late December 1977 and in January 1978 are somewhat confused due, in part, to the nonsequential manner in which the evidence as to these events was presented. However, it appears that on or about December 20, 1977, shortly before Hardwick was due to submit its formal plan for constructing the 400 structure, Corps and Hardwick representatives discussed Hardwick's proposed plan. By that date, December 20, 1977, the Corps's field representatives and higher level staff recognized that in certain critical areas west of the lake some Plan elevations were in error. Representatives from Hardwick who attended this meeting including Golie Hardwick, Charles Manson, John Sutterer and Jim Meyers. Howard Gillen, who was at that time Chief of the Supervision and Inspection Branch within the Construction Division, and Mr. Elmore were among those who attended this meeting on behalf of the Corps. The parties vigorously dispute what transpired at this meeting. Unfortunately, there are no meeting notes to support the contentions of either plaintiff or defendant respecting the discussions which took place regarding the contours shown on the Plans.

Immediately after the December 20 meeting, Golie Hardwick, wrote a letter dated December 21, 1977, to Mr. Elmore, which set forth in detail Hardwick's proposal for a

plan of operation for the 400 structure. The letter noted that on December 21, 1977, the water surface of the lake was at elevation 620.5, that placement of the structure would incur difficulties unless the plan was approved, that closure of the proposed diversion ditch back to natural grade would be made by September 1, 1978, to "enable water surface elevation to rise to 620.0 which is grade of top of existing rock weir remaining in place" — an error, since the rock weir's top grade was actually at 618.5 — that the proposed ring levee would protect the structure while it was being constructed and that the diversion ditch and ring levee would not be completed until after the closing of the water fowl season on January 2, 1978. The letter also noted that Hardwick expected to begin construction on April 1, 1978 and to dewater to elevation 609.0 as required for the front toe of the structure. No mention was made in this letter, however, of any Plan contour errors.

Another memorandum, also dated December 21, 1977, and apparently written by the Corps's John Morris (he was also an attendee at the December 20 meeting), stated, in part, as follows:

> Howard Gillen called and informed me that he and Dean Schuster was [sic] in agreement that the contractor has the right to lower the lake El. to El. 619.5 as shown on the contract drawings. He was informed that the contractor's detail[ed] plan of operations for the structure at sta. 405+00 will indicate a diversion channel with a flowline of El. 618.5 to allow the foundation to dry so he would be able to construct a ring levee and to excavate the approach channel.

Subsequently, Mr. Morris wrote a memorandum relating to the meeting which was signed by Mr. Elmore, his immediate

superior. That memorandum reveals that the attendees discussed the lake elevations as follows:

> . . . the elevations (shown on the plans) for the lake were at 620.5± and the ground el. in the vicinity of stas. 270+00 & 300+00 varies from el. 619± to 620±. The contractor feels the lake surface el. will have to be lowered to el. 618.5 before he can preform [sic] the required foundation work. I concur with his feelings.

Howard Gillen, responded by writing a brief memorandum dated December 30, 1977 instructing that a site visit be made before giving approval to the Hardwick proposal.

On December 28, 1977, Mr. John Morris, again for Mr. Elmore, wrote a memorandum addressed to "Chief, CD-I," which stated the following:

> 1. Due to the controversial issue of the surface elevation of Cut-Off Lake, the Contractor's proposed detail plan of operation for drainage structure R.B. Sta. 400.+5 is being submitted for your review and comments prior to action being taken by this office. This type of plan is necessary to allow the required work to be constructed in the 'dry'.
>
> 2. The Contractor's proposed plan will lower the surface elevation to 618.5 which he considers a minimum but sufficient drawdown to allow the construction to proceed in the dry. (It is questionable if this will be a sufficient drawdown.) This

drawdown is necessary to provide a stable foundation to allow for construction of the upstream ring levee and excavation of the approach channel and structural excavation. Dry conditions are also necessary for processing the levee foundation in this area. Also, the Contractor anticipated completing the concrete work and embankment to El. 628 and make closure by 1 September 1978. This closure date should allow the fall rains to recharge the lake to El. 620 or 622. A 618.5 surface drawdown elevation would allow for revegetation of the areas normally inundated. This would allow a desirable habitat for both the water fowl and fish once the normal surface elevation is obtained.

3. The 618.5 surface elevation will also drain the low areas at approximately R.B. Sta. 266+00, R.B. Sta. 291 to R.B. Sta. 301+00 and borrow area No. 2. The original X-Section notes (by K. C. District) indicates the elevation in the areas to vary between El. 619 to El.620. The plans show an elevation of 621+. *This is felt to be a changed condition and the Contractor could make a claim if these areas are not allowed to be drained.*

4. The Contractor's proposed plan is a step in the right direction and approval is recommended. (Emphasis added.)

Under the Corps's normal procedures, if the Corps determined that an event was a changed condition, based upon clear, concise and factual determinations, a contract change ordinarily would be negotiated and formally executed. In this

case, Corps officials, upon review, determined to investigate further. Accordingly, the memorandum was sent to the levee's designers for review because it was "essentially a design problem."

Mr. Barber subsequently wrote to Mr. Elmore, the Resident Engineer, referring to Mr. Morris' memorandum written on behalf of Mr. Elmore, as follows:

> We do not agree with paragraph three of CNT-1, that the profile and cross sections notes that vary one or two feet from the drawings would be a sufficient basis for a contractor's claim of changed conditions. *This is a very strict and dangerous interpretation.*
> (Emphasis added.)

Based upon Mr. Morris's memorandum and pursuant to Mr. Gillen's instructions, Messrs. Schuster, Holloway and others accompanied Mr. Morris to the job site to "confirm field conditions." They toured the site on January 5 and 6, 1978. Apparently, no Corps official ordered an instrument survey to confirm the accuracy of the bench marks or the contours shown on the manuscript map which may have been brought into question by the memorandum. Further, no written investigative report of the trip was prepared respecting the group's observations and conclusions. All of the working files, including any investigative memoranda, were subsequently either lost or destroyed.[13] Hardwick was not informed of the Corps's internal

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13. The Corps's existing files are not sufficient to permit determination of what the Corps's site visit and comprehensive investigation revealed regarding the alleged contour errors.

investigation resulting from the memorandum prior to this litigation.

Mr. Gillen, Mr. Morris's superior in the Corps's chain of command, forcefully brought his opinion about the memorandum to Mr. Morris's attention. He told Mr. Morris that the variance should not be referred to as a "changed condition." Thereafter, Mr. Morris's opinion was also not disclosed, in keeping with standard Corps practices. Mr. Morris was not experienced in map making, topographic contours, National Map Accuracy Standards and related matters. However, he was a qualified Civil Engineer and a responsible Corps official.

On January 27, 1978, Rick Krueger, an environmentalist, along with Larry Cavin and Mel Jewett of the Corps's environmental group, called Mr. Elmore to discuss the difficulties being encountered at Cut-Off Lake. Mr. Krueger's telephone memorandum form indicates the following:

> John then said they wanted to lower the lake to at least 618.5. He said the areas between Stations 250-270 and 291-300 would not be dry at 619.5 which were the critical areas for draining in the first place. The reason, he said, was the contour map was off in those areas, and that the land is actually lower than what the map shows.

Hardwick generally regarded Mr. Elmore as fair in his interpretation of the specifications. Mr. Elmore remained as the Corps's Chief Inspector and authorized representative at the job site until June 4, 1978. At that time the Contracting Officer officially designated John D. Palmateer as the authorized representative.

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Mr. Palmateer's assumption of Mr. Elmore's duties on the Project had an immediate impact upon Hardwick's performance because of his more stringent interpretation of Contract specifications. For example, Mr. Palmateer immediately voiced concern with respect to the contractor's priority of work shown in its plan of operations. However, after subsequent correspondence, Mr. Palmateer finally approved the various modified plans of operation as submitted.

On a Sunday in early 1978, Hardwick learned that the Missouri River was about to flood. Charles Manson, without prior Corps approval, installed a temporary cross levee consisting of two old modified railroad cars with flap gates in Palmer Creek close to the river. This was done as an emergency measure in an attempt to avert crop damage from expected high river levels. While Mr. Palmateer was informed of this proposed action beforehand, he neither approved or disapproved of the action. Hardwick's installation prevented serious crop damage from high river levels. The Corps allowed the cars to remain in place until they were no longer needed.

Because of the extent of inundation of the job site, Hardwick soon determined that designated borrow areas numbers 1 and 2 would likely never be sufficiently dry to permit their economical use with scrapers even if dozers were used to push them to assist their loading or even if draglines and dump trucks were employed in these borrow areas. Therefore, Hardwick decided to abandon the compacted fill method of construction and to seek the Corps's approval of the uncompacted fill alternate allowed by the Contract. After discussions with Corps officials about the proper procedure to gain approval of the changes Hardwick contemplated, Hardwick submitted a Value Engineering Cost Proposal (VECP) to the Corps for approval.

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The VECP is a device which allows a contractor to implement an innovation while permitting both parties to share in the savings which the idea produces. In this case, Hardwick realized that the construction and cost of the levee would be substantially improved if the contractor could abandon borrow areas 1 and 2 and, instead, use other borrow areas at the west side of the lake. Accordingly, Hardwick, due to the use of NW 95 draglines and an 80 percent requirement for double casting (*i.e.*, handling the same bucket load twice in order to reach the levee), submitted its VECP which proposed the use of separately purchased borrow sources both within and alongside the lake and within 300 feet of the levee. The Contract required that Hardwick submit its VECP to the Corps for approval because the VECP involved the use of borrow sources within 300 feet of the levee, which use, through loss of lateral support, could substantially weaken the levee.[14]

The Corps took about three months to fully investigate and act favorably upon Hardwick's VECP. As finally approved, the VECP contained no special handling requirements for drying or manipulation of the material or any prohibition against

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14. Under the Contract, as a part of its special engineering review process, the Corps retained the right to approve any change within 300 feet of the levee because of the potential weakening of the levee from the removal of lateral support. In fact, the levee could be so weakened as to result in failures. Further, if there were sand lenses present where the borrow was removed, underseepage through the foundation could occur. If these events had occurred, the Corps would have had to bear the repair costs. Assessment of such risks was done by the Corps's S & I Branch and Engineering Division before granting approval of the VECP. Any change of $50,000 or more had to be approved by the Contracting Officer, Col. Richard C. Curl. Since this proposal exceeded that amount, it required Col. Curl's personal signature, as Contracting Officer.

backward and forward casting.[15] After negotiations, Hardwick and the Corps agreed upon a total savings of $94,000 for permitting lake side borrows within 300 feet of the levee in conjunction with Hardwick's VECP. Hardwick and the Corps shared in this savings, which actually resulted in a payment by Hardwick to the Corps.

After the Corps's approval of the VECP, Hardwick repaired the 200W dragline by replacing its engine and other parts, and "walked" it westwardly or up the river to the Project site where it was finally positioned for use west of Cut-Off Lake.

When Mr. Elmore was in charge at the job site, the two-foot lift thickness limit for material cast on the levee, as provided in Contract Subsections E and F, p.7, ¶ 2D-7, meant to the parties that draglines could not cast material any thicker than two feet after manipulation by bull-dozers. However, there was disagreement within the Corps itself as to the meaning of this requirement. Mr. Elmore's interpretation that the two-foot lift thickness limitation applied after manipulation changed upon Mr. Palmateer's arrival. Thereafter, Corps inspectors complained to Hardwick personnel that the lifts were too thick and too wet for placement in the levee. Moreover, these inspectors specifically referred to the two-foot lift thickness limit in the specifications as the basis for their objections.

At one meeting of Corps and Hardwick representatives at a hotel in Brunswick, Missouri, Corps representatives were asked by Golie Hardwick to allow the levee to be built to the

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15. By casting backward and forward, a dragline can deposit material both ahead and behind its position before advancing, thus permitting additional drying before manipulation.

completed height in one operation so that Hardwick's draglines would not have to be moved back empty or "drywalked" to the starting point of a particular reach before commencing placement of the next layer of fill. Mr. Golie Hardwick told the Corps that, in his opinion, his proposed construction method was more efficient than placing each lift in 500 foot reaches and drywalking the drag-line. Hardwick's request was denied.

Initially, Golie Hardwick acted as Hardwick's Project Manager and personally supervised the job. Sadly, Hodgkins disease forced Mr. Hardwick to resign as Project Manager. He died prior to Hardwick's filing of its claim. After his departure in 1977, Deneen Hardwick assumed the duties of Project Manager. However, he soon found that the stress of attempting to run Hardwick's Beardstown, Illinois, headquarters and manage the Project at the same time was simply too great. Therefore, Deneen Hardwick resigned as Project Manager, effective about July 1, 1978, and Alan Haberman assumed the position.[16]

After the arrival of Mr. Haberman, Hardwick went forward with work with reasonable dispatch. This was possible because by August 1, 1978, job conditions had begun to improve. Therefore, Hardwick brought in more machines and stepped up the pace of work, thereby allowing it to produce more dollars in payments. In fact, Hardwick completed most of the clearing operations by September 1978. By using larger TS-18 scrapers

16. Alan Haberman, Ted Hardwick's son-in-law, was a farmer who had also served as commissioner in the Brunswick-Dalton Drainage District before the letting of the Palmer Creek job. He had years of experience in building agricultural levees before working for the Hardwicks on the Palmer Creek job. Mr. Haberman took over as Hardwick's Project Manager around August 1, 1978.

and wide-track dozers and other special equipment, Hardwick was able to almost double the Corps's monthly progress payments from $80,000 to about $160,000 and more promptly repair or replace parts and equipment. Also, to increase production, Hardwick, in the fall of 1978, brought, in extra equipment, including an extra dragline, two floatation dozers and certain other specialized equipment. However, Hardwick still had problems with equipment breakdowns due, in part, to weather conditions, levee failures, and problems in constructing coffer dams for the two lake crossings west of Cut-Off Lake. These dams required dewatering with two- to six-inch pumps, the removal of all Class II material and its replacement with approved sand hauled from another area by scrapers. Further, Mr. Haberman had to replace a bridge at RB 402 which had been destroyed by the river, remove mud and debris around the 400 structure by hand and repair wave wash and runoff damage.

One of Hardwick's major problems, particularly during this period in 1978, was dealing with the Corps's inspectors who by that time were under the supervision of Mr. Palmateer.[17] As previously noted, he was appointed as the Contracting Officer's representative and Project Engineer, replacing Mr. Elmore, in early June, 1978.[18] Under Mr. Palmateer's direction, the Corps's inspectors, including Mr. Paul Whaley, sometimes required

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17. Mr. Palmateer, an experienced Corps official, had served in the Corps's Glasgow office and later in its Jefferson City office performing levee design work before his assignment to the Project.

18. At the time Mr. Palmateer replaced Mr. Elmore, he had had little experience in "dirt work" jobs. Yet, Mr. Palmateer was assigned the responsibility for determining the quality of Hardwick's materials and workmanship and interpreting the Plans during construction. He retired from the Corps's Kansas City office in 1988.

work not specifically required by the Contract, regardless of the difficulty of operating conditions. Hardwick, at the time, objected to these inspection requirements, which included the mixing of wet and dry material, drywalking of the draglines, elimination of dragline casting on a carry-a-lift-forward basis (or backward and forward casting), adherence to the specified 500-foot limit for each reach of the levee, casting only when a dozer was present on the fill, added passes with the dozers so that more compaction could be obtained than that resulting from only one or two passes (which was beyond the requirement of removing large open voids), adherence to the same "root rule" which applied to the compacted fill method, meaning that all roots exceeding two inches in diameter had to be picked out of the fill by hand.[19]

Mr. Whaley also severely criticized Hardwick's staking work, particularly that done under the supervision of Jim Myers. However, many of the errors noted by Mr. Whaley in his logs were actually found by Hardwick and immediately corrected

19. The Corps's master diary entries contain critical comments typified by such entries as "contractor advised to keep dozer working at all times . . . to mix dry and wet materials," "no dozer spreading fill," "the low ground pressure dozer was working to get a homogeneous mass," "dozer breaking clods and lumps to make sure we had a solid levee," "loads . . . too wet to work," "clearing and grubbing . . . left in piles and scattered," "rough finishing of fill slopes . . . is not continuous performance," "levee surfaces are not dressed as levee construction progresses," "blading and sealing of impervious and random zones when rain is imminent has not been accomplished," "dozer having trouble getting through for proper traffic compaction," "material is piled too high," "dozer not able to get over wet material properly," "seems to be no initiative for quality workmanship." Few, if any, of these comments were accompanied by details respecting exact locations, the parties involved, or the corrective action taken.

without Corps involvement. Further, although Mr. Whaley's notations often indicated that something was "wrong" or "off he did not define the error, who committed it, specify whether it was a serious error or report what action, if any, Hardwick later took to correct it. Mr. Whaley further criticized Hardwick for:

(1) rejecting his (Whaley's) suggestion that Hardwick use the end configuration method for determining quantities, a method which he thought would have saved Hardwick money;

(2) not dressing the slopes as the levee went up — although, admittedly, there was nothing in the specifications requiring dressing at any particular time;

(3) not scarifying the surface of the levee with sufficient frequency to assure bonding of the next lift;

(4) scarifying too far in advance of the next placement (Whaley contended that a heavy rain could penetrate and saturate the foundation and require delay to allow drying);

(5) erroneously placing sand in an impervious zone;

(6) not having dozers working on the fill at all times;

(7) permitting rutting in the levee; and

(8) not having root pickers on the levee to remove all roots which were two inches or greater in diameter.

Mr. Whaley's criticisms were not supported by defined terms or specific Contract requirements. For that reason, Hardwick

complained to Corps inspectors that these criticisms were unfair and represented nitpicking. However, Hardwick usually attempted to respond to them promptly.

Mr. Whaley's reports do not contain specific criticisms of Hardwick's compliance with the lift thickness limit in the specifications. Apparently Mr. Whaley interpreted the specification as Hardwick did — that the two-foot lift limit was meant to be applied after manipulation. Further, Mr. Whaley determined compliance with the two-foot limit not by accurate measurement, but rather by a simple visual examination of the lifts as they were being placed and manipulated. In other words, he complained only when the lifts appeared subjectively to be too high. When Mr. Whaley thought a dozer might get stuck trying to manipulate the lifts, he would immediately object because he then considered the material to be too wet. This operational inability was his benchmark for voicing an objection. Mr. Whaley also thought that when the draglines would cast material in piles on the levee fill, each pile had to be sufficiently close together to get the dozer over them, but not so close that when the individual piles were knocked down, the overall lift might exceed the two-foot limit.

With regard to the 15 percent overbuild requirement, the Plans contemplated settlement greater in the middle than on the slopes. Ordinarily, the overbuild would have called for a steeper slope initially, until settlement effected a return to the one-to-three slope ratio. However, to comply with the 15 percent overbuild requirement for the uncompacted fill alternate, Hardwick extended the overbuild in the same thickness all the way to the toe of the levee thereby retaining the one-to-three slope. Hardwick chose to use extra dirt quantities, without compensation, rather than assume the risk that the Corps might

determine that the levee was short of the specification requirements and — at great added cost to Hardwick — demand that it return with its equipment, obtain additional borrow sources and add to the height of the levee to obtain the Corps's acceptance. Thus, it added more material to the levee than the specifications required to assure that the levee, when completed, would conform to the specifications. Although Mr. Whaley called the unnecessary overbuild to Hardwick's attention, Hardwick did not modify the slope but left the overbuild as originally constructed. Based upon Whaley's later computations, about 35,000 cubic yards of extra dirt were placed between stations 120 and 400.

Hardwick representatives had a meeting with the Corps shortly after Mr. Haberman arrived on the job. At this meeting, the Corps threatened to withhold progress payments. Although Hardwick had complained about the Corps's inspectors' nitpicking, the main discussion at the meeting was about the proper interpretation of the lift thickness requirement. At that meeting the Corps continued to urge adherence to its interpretation that the material after casting, but before manipulation, could not exceed two-feet in thickness. Hardwick refused to agree with this interpretation, so the meeting did not resolve this conflict.

Mr. Whaley also told Hardwick representatives that, in his opinion, the Glasgow gauge readings could not be correlated to the job site. The basis for this opinion is not explained in the record. In any event, Mr. Whaley did not criticize Hardwick for not correlating these gauge readings to water levels at the Project based simply upon the general knowledge that the Missouri River's elevation dropped about one foot per mile in the Missouri River down to the Glasgow gauge.

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Mr. Whaley helped to set up four water level gauges in the lake. His report for May 26, 1978, showed that he instructed that the gauges be set so that they would register when water levels reached 618.5 MSL. The lake has the capacity to rise 0.3 inches in one day. Defendant's gauges show that the lake level actually rose by this much on August 2, 1978, and June 28, 1979. Also, about these times during construction the water table west and south of Cut-Off Lake was at ground level.

The difficult relations between the parties were exacerbated by Mr. Palmateer's letter of December 7, 1978, to Hardwick detailing plaintiff's unsatisfactory performance. Specifically, the letter stated that Hardwick had shown a "lack of initiative" in determining the cause of and remedy for the bank-full condition of Palmer Creek. At the time of this statement, the Corps's files showed that Mr. Palmateer actually knew the real cause of this condition. On June 29, 1978, he had determined that a reading of 19 on the Glasgow gauge (lower than bank-full at the gauge) was, alone, sufficient to cause the back-flow of water over the sill at the lake.

Due to its experience during the 1977-78 construction season when flooding and back-water from the river caused high lake levels (thereby preventing Hardwick from realizing any benefit from seasonally expected lower lake levels), Hardwick determined that the lake had to be lowered. Hardwick sought immediate approval of the plan to lower the lake because of the relatively long time required to physically effect a drawdown of the lake's level to the 618.5 MSL. That request was initially rejected by Mr. Palmateer by letter which revealed that other agencies (the Fish and Wildlife Service and Environmental Protection Agency) were necessarily involved in obtaining approval of Hardwick's request to lower the lake.

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The Corps had repeatedly threatened Hardwick with the issuance of an interim unsatisfactory report ("IUR"). Because such a report often precedes a notice of termination for default, contractors regard an IUR as a very serious criticism of performance. Although Hardwick was under the impression that it had done all that was needed to satisfy the Corps so that no IUR would be issued, the Corps issued the IUR on January 5, 1979, in the form of a letter signed by Mr. Palmateer.

The normal flow in the Missouri River at Kansas City upriver from Palmer Creek is approximately 41,000 cubic feet per second (cfs). In 1978, during construction, the Corps determined that the flow at Kansas City was between 60,000 and 61,000 cfs. Therefore, in March, 1979, the Corps warned Hardwick that the flow would be 5,000 to 10,000 cfs greater than normal for the coming 1979 season.

The Contract required dewatering of the 400 and Main Stem concrete structures to a level of three feet below the lowest point of the structures which was the bottom of a vertical concrete flange extending across the front of the flat apron of the structures. This flange is designed to keep water from going underneath the concrete apron. However, the Plans contained no specific method for the dewatering of these structures. Therefore, Hardwick, under the Contract, had the discretion to dewater by using one or more sump pumps, a well-point system or a deep well pumping arrangement.

The levee intersected with the pipeline of Universal Pipeline Company south of the 400 structure. CH-2-M Hill ("Hill") acted as a dewatering subcontractor for Universal Pipeline Co. It used a piezometer, having a two-inch plastic PVC pipe with slotted openings and a filter pack to obtain water

level readings. Hill's dewatering test wells for the pipeline crossing showed an unusually high water level. Usually, a low water level is an advantage because it means a lower pumping rate, fewer wells, shorter periods of pumping, shallower wells, and, accordingly, a less expensive dewatering operation. However, the efficiency of a particular system depends upon many factors including speed. Hill, from its experience with dewatering for the pipeline, proposed that Hardwick use a deep well pump system to produce the necessary drawdown.[20]

Before beginning its dewatering efforts at the 400 structure, in accordance with its Corps-approved plan, Hardwick constructed a ring levee around the structure to direct the lake's water away from the work. Its first attempt to dewater by means of a sump pump was unsuccessful because about 10 percent of the total area in the bottom of the excavation remained soggy or spongy. Even after Hardwick replaced this wet material with dry dirt, the sump pump failed to adequately dewater this area. This failure of the sump pump indicated that the water table was at or near the bottom of the excavation. Because Hardwick wanted to complete the dewatering for the 400 structure as quickly as possible so that the concrete could be poured before cold weather came, Hardwick concluded that it had no more time to experiment with a larger system consisting of simply more sump pumps. Therefore, on October 25, 1978, it had Layne Western, an experienced dewatering contractor, install one deep well system which succeeded in effectively dewatering the spongy area so that the concrete pour could proceed.

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20. The drawdown can be determined at any given point using measuring devices and math calculations. For the Hardwick dewatering work, Hill assumed that the water was at ground level and that a large pumping system would be needed.

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The dewatering of the Main Stem structure also presented problems. Hardwick put Jim Lewis, who lacked experience in dewatering, in charge of this installation. However, when Mr. Lewis attempted to get the Corps's approval of a plan of operation for constructing the Main Stem structure, Mr. Whaley refused to approve any of his proposed plans because they involved using what he said was an inadequate dewatering system. Several discussions with Corps personnel about the number of deep wells needed to adequately dewater occurred. One such discussion took place, on May 7, 1979, as shown by the Corps's master diary. However, the diary entry contains no language indicating that the Corps was requiring a four-well system. In any event, a dewatering plan involving four wells, in a form satisfactory to Mr. Whaley, was ultimately submitted on October 4, 1979 and finally approved by the Corps. As a result of its difficulties and delays in dewatering the two structures, Hardwick significantly exceeded its cost estimates for dewatering work.

As discussed earlier, the Plans called for the use of riprap to meet a particular specification and listed five approved sources. Only after Hardwick commenced work upon the concrete structures — several months after winning the contract — did it actually contact suppliers in order to purchase riprap. At that time Hardwick discovered that the approved sources were unable to supply riprap meeting the specifications. Hardwick immediately sought approval from the Corps for alternate sources of materials. On May 23, 1980, Hardwick was advised of alternate approved sources. Later, the Corps provided Hardwick's Jim Henke with a list of these alternate sources and patterns of substitute rock. The total period of time from Hardwick's request for approval of the alternate sources and the Corps's approval was 35 days. Unfortunately, the new

approved sources were located much farther away from the Project site. In fact, the source Hardwick finally chose, Central Stone Company of Huntington, Missouri, required a rather lengthy round-trip haul via truck. This caused Hardwick to incur additional, unanticipated trucking costs.

When the Corps learned that Hardwick planned to lower the lake 1 1/2 feet during the period from March 1 to August 1, 1978, it contacted other agencies who had wetlands jurisdiction under the Clean Water Act, including the Fish & Wildlife Service and the Environmental Protection Agency and the Missouri Department of Conservation. Corps officials met on January 30, 1978, with officials from several of these agencies and discussed various, related issues including the need for an Environmental Impact Statement, the risk of a significant fish kill, the time required for reestablishment of the lake level to 620 MSL and the need for replanting of grasses in the disturbed areas. By February 10, 1978, an agreement was reached among these agencies which allowed lowering of the lake commencing March 1, 1978, permitted Hardwick to construct a permanent or temporary structure by August 1, required that the lake be returned to 620 MSL by September 1, and required that grasses be reseeded in the disturbed areas.

In order to complete the levee Hardwick obtained operating funds by selling equipment. Thereafter, it completed all work and sought Corps approval. After a final inspection, the Corps accepted the work.

Hardwick did not immediately submit a claim to the Corps's Contracting Officer requesting a final decision. Although the work had been completed, the Contract was not then closed, and no final resolution of the matter was reached

by the parties. Before filing a formal claim with the Corps, Hardwick sought to determine exactly what had happened to cause its perceived losses in performance of this Contract. Therefore, through its counsel at the time, Lawrence Lerner and Mike Barker, Hardwick made a broad request to the Corps on March 24, 1982, for an opportunity to review Corps files and data relating to the Contract.

Dennis Denker, an Engineering Technician who was with the Corps's Claim Section in Kansas City, Missouri, received Hardwick's counsel's request. Mr. Denker knew very little about the requirements for properly responding to such a request. He was not sufficiently trained to be able to distinguish between such a request and any others. Therefore, on behalf of the Corps's Claims Section, he treated the request as one similar to a Freedom of Information Act ("FOIA") request and subject to the same privilege restrictions upon document production applicable under FOIA. Accordingly, Mr. Denker asked Mr. Palmateer to review all Glasgow office files and send any documents to the Claims Section in Kansas City, Missouri, if they were relevant, even if they might be exempt from production under FOIA. The Corps's intent was to have the Corps's Office of Counsel review these documents before they were produced to Hardwick. Thereafter, Mr. Palmateer, in response to Mr. Denker's request, replied to Messrs. Lerner and Barker by stating that they would be shown all of the Corps's files, which were being gathered for their review at the Corps's Glasgow office. Based upon what Mr. Palmateer had said, Messrs. Lerner and Barker understood that the only documents that would not be produced would be those that were subject to a claim of privilege under applicable discovery rules, that the Corps knew that their request was not limited in any way and that FOIA restrictions were not applicable since this was an open contract.

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Thereafter, Mr. Lerner made two visits to the Corps's Glasgow office, one in late April 1982 and another on May 12 and 13, 1982. On the first visit in April, he was accompanied by Mr. Barker. Certain documents, later produced to plaintiff, were not among those documents made available to plaintiff's counsel at Glasgow. Based on his knowledge of the case, Mr. Lerner might have immediately seen their relevancy, if they had been produced. However, Mr. Lerner also knew that there were some documents that were not being produced by Mr. Palmateer. In fact, Mr. Palmateer told Mr. Lerner this. However, Mr. Lerner did not request these unproduced documents at that time because he thought they were few in number. Although he did not know what these documents were, he did not think they related to possible Plan errors.[21]

Mr. Denker immediately directed that the file folder, after he received it from Mr. Palmateer, be sent to the Corps's Office of Counsel in Kansas City for review and approval of documents for production to plaintiff in response to plaintiff's counsel's request. This particular file was never produced to Hardwick's counsel either at Glasgow or later during formal discovery in this case. To date, it remains a complete mystery as to what happened to this folder.

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21. For example, a memo of a telephone conversation between Rich Krueger and the field office relating to the Corps's Hardwick file review at Glasgow, should have been among the documents made available in April 1982. Further, a statement of findings of fact dated March 23, 1979, regarding Modification P00010 relating to a particular drainage structure at station 467 + 15 (this statement contained the admission that "the original interior drainage design was based on the 1963 topo maps which have since been proved by recent field trips and investigations to be inadequate in several areas") also should have been part of the files produced at Glasgow.

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In 1982, when plaintiffs request was received, Ed Elkins, a Corps attorney, was the designated FOIA officer at the Kansas City Corps office. Corps counsel were required to determine all exemptions from production under 5 U.S.C. § 552. However, if relevant information was being withheld, the Corps's standard procedure involved advising the contractor of this fact in writing. Such advice to a contractor would normally be in the Corps's file along with standard transmittal forms, cover letters and responses documenting the Corps's entire review process. If the document request related to a potential claim or actual claim, all information would have been retained in one "claim file" in the Office of Counsel. However, in fact, by 1984, there was only one file related to Hardwick remaining in the Office of Counsel. This file was not classified as a claim file since it only contained memos.

Mr. Palmateer kept records in accordance with applicable regulations, but he never disposed of any Corps records. He responded to plaintiff's counsel's request for review of records, which he received about March 20, 1982, by sending the document request to Kansas City to Mr. Denker and advising Mr. Barker that the records would be available in Glasgow. Later, when Messrs. Barker and Lerner came to Glasgow as attorneys for Hardwick, he personally met with them. At the time of their first review, on April 27, 1982, he prepared a memo of the records they were given and the scope of their review. Thereafter, he conversed with James H. Dyer, Jr., an attorney, and Harry Moore, Chief of the Office of Counsel, also an attorney, regarding the copies of the documents he had sent to Kansas City. At trial he could recall nothing regarding the subject matter of these discussions. Mr. Palmateer did not personally review any of the files before making them available for examination at Glasgow. He interpreted Hardwick's counsel's request as limited to the field office files.

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Based upon the information presented to them, plaintiff's counsel determined that plaintiff had a valid claim. Thereafter, plaintiff submitted its claim, as required under the Contract Disputes Act, to the Contracting Officer.

DISCUSSION

Reasonableness of Plaintiff's Bid

Plaintiff contends that its bid was reasonable in light of all the relevant factors, including its substantial experience in the levee construction business in the Missouri Valley. Hardwick further points out that, in formulating its bid, plaintiff relied on the Plans, available boring logs, and its investigation of the site itself. Thus, Hardwick argues that its bid was entirely reasonable and prudent.

Defendant contends, however, that Hardwick, as an experienced contractor, should have expected that the site was likely to become excessively wet due to potential weather conditions and flooding. To the extent that Hardwick's bid did not take these hazards into account. Defendant maintains that Hardwick's bid was much too low to have been reasonable. Specifically, defendant argues that:

(1) plaintiff failed to properly consider that the work was in a floodplain; that there were three relatively large bodies of water, whose levels would obviously fluctuate significantly over time, in close proximity to the work;

(2) plaintiff relied unreasonably on boring logs that were more than a decade old and which did not represent conditions present at the time of bidding;

(3) even to the extent that plaintiff did rely on the boring logs, Hardwick apparently ignored the fact that some borings showed the water table to be within five feet of the surface;

(4) that the Plans contained Missouri River hydrographs which actually showed significant fluctuations in water levels;

(5) that information relating to the slope of the Missouri River, the frequency of inundation and the areas of ponding and poor drainage was known by area residents; and

(6) that if plaintiff had exercised due diligence during and after its investigation and site visits, it could have obtained additional pertinent information from local residents, from experts in the field of hydrology and from indications in the Corps's files and field notes.

Defendant argues that Hardwick's equipment for performance of the Project was marginal. Mr. Fulkerson's testimony was that plaintiff's equipment was a hodgepodge which needed repairs even when brought to the site. However, given the size of the job and the amounts of various types of construction equipment needed to perform the work, it is not surprising that some used equipment was purchased and, because brought from other jobs, initially needed repairs. These repairs were often completed at the job site as field repairs. Although there were breakdowns and failures, these were primarily caused, not by Hardwick's neglect or negligence, but by the severity of weather conditions and the resultant wear and tear upon the equipment.

The evidence shows that plaintiff performed a site visit over a two-day period before bidding. However, during its site

visits it elected not to take additional deep soil borings but, instead, used a hand held dynamite auger with a very limited capacity to obtain soil samples. Further, it used a stick to simply probe the soil in an unidentified number of locations to determine the extent of the soil's compaction and sufficiency for scraper operations. Hardwick elected not to examine the field notes before bidding. Hardwick elected not to consult with a hydrologist or geotechnical engineer about potential wetness problems at the site before bidding. Its investigation of local conditions was too superficial to be considered adequate under the circumstances. Accordingly, the court agrees with defendant that these actions, particularly in view of the floodplain location of the job site and its proximity to three significant bodies of water, were not those of an experienced and prudent contractor and were insufficient under the circumstances.

Additionally, based on a careful comparison of the testimony of both plaintiff's and defendant's witnesses relating to the adequacy of the Corps's borings (testimony discussed in greater detail later in this opinion), the weight of the evidence is persuasive that the Corps's borings, although not perfect, were sufficient to alert an experienced levee contractor to the likelihood of operational difficulties due to wet conditions. Therefore, the court further finds that Hardwick's reliance upon the Corps's out-of-date borings, and its conclusion that those borings represented the conditions which plaintiff would face *years later*, was not reasonable and prudent.[22]

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22. Hardwick apparently relied upon the Corps's borings and other Plan data, in part, because of the Corps's general expertise in the areas of soils strengths, geotechnical analysis and hydrology. However, as an experienced contractor plaintiff had sufficient warnings of potentially wet conditions in the Plans, from its site visit from its past experience in (Cont'd)

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Defendant also contends that Hardwick's bid must be viewed as unreasonable when compared with the Corps's own reasonable estimate. That estimate, which was also based upon the compacted fill method of construction, anticipated moving approximately one-third more earth (by draglines and dump trucks) than Hardwick's bid contemplated because the Corps thought that the site would be too wet for normal scraper operations. The Corps's estimate also anticipated using certain items of equipment that Hardwick did not consider to be needed, particularly in dewatering for the concrete structures. Further, the Corps's bid contemplated using heavy scrapers (Euclid 657's, for example) and, in certain borrow areas, draglines and dump trucks. Defendant's expert testimony was convincing that such scrapers could have operated, albeit with some difficulty, in the areas contemplated based upon anticipated load factors, haul road usage, the sizes of the tires utilized by the equipment and the types and thicknesses of soils involved. Thus, the court finds that the Corps's estimate was reasonable and that it indicates, when carefully compared with plaintiff's bid, that plaintiff's bid was beneath industry standards.

In sum, based upon a detailed review of plaintiff's actions and assumptions regarding the Plans and the job site, which included its undue reliance upon the Corps's borings, its failure to review the field books or even request an opportunity to

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levee construction in the Missouri Valley to determine that additional deep borings were needed. Although plaintiff was under no contractual obligation before submission of its bid to take its own borings, analyze soil samples, do blow counts, talk to local residents about potential job site wetness or employ a consultant hydrologist, under the particular circumstances of this case, Hardwick's failure to do these things was imprudent.

review them before bidding, its failure to take its own deep soil borings, its superficial and inadequate investigation of local conditions, its failure to anticipate and allow for the possibility of the occurrence of extremely severe weather conditions at the site and, in general, its misconstruction of the Plans, the court concludes that under all circumstances here present, plaintiff's bid was below industry standards and highly vulnerable to bad weather conditions. On balance, the court finds that based on the preponderance of evidence presented, Hardwick's bid was unreasonably low and not that of a reasonably prudent contractor.

Defective Design and Contour Error Claims

Plaintiff contends that the design of the levee was inherently defective because of the particular alignment or location of the levee selected, its height, width, slope and other design parameters, including the designation of inadequate borrow sources. Defendant contends that the design of the levee was adequate in every respect and its location was entirely appropriate given the flood protection purposes assigned to the levee.

The evidence shows that the levee's location represented a reasonable compromise among various competing interests. The alignment finally chosen was selected to best protect adjacent farmland from flood damage by channelizing Palmer Creek, which flowed into the lake, and by bordering the lake with the levee to help contain the lake at a reasonable cost to the government. An alternative centerline location further to the west, although offering construction advantages over the alignment that the Corps chose, would have abandoned to flooding and non-use potentially valuable farmland to the east

of such an alignment. Also, such a location would have detracted from serving the basic purpose of the levee — the preservation and protection of valuable agricultural lands from flooding. There was sufficient borrow to construct the levee as designed although borrow sources to the west of the levee's alignment may have been more accessible and drier than those identified in the Plans. Further, the 15 percent overbuild requirement was entirely standard for construction of a levee using the uncompacted fill alternate which Hardwick ultimately used. The 15 percent overbuild requirement, if adhered to exactly as designed by the Corps, would have been adequate for construction of the levee. (The degree of initial increase in slope from the overbuild is patently not so severe that permanent stability of the levee was in any way threatened.) Finally, the court's own 1991 site visit revealed a well-constructed levee in excellent condition as of that time. Consequently, on the record presented, and for the reasons assigned by defendant, the court finds that the Corps's design of the levee was not defective because of the levee's location, height, slope, or other design parameters including the 15 percent overbuild requirement and designation of borrow sources.

Plaintiff contends that its evidence has shown the existence of material contour errors in the Plans — material because the contours did not comply with accuracy standards which, under the circumstances, it says the court should apply. Plaintiff argues that it reasonably relied upon the accuracy of these erroneous contours on the Plans in bidding this job. Thus, it argues that because the wetness and extent of inundation of the job site were much greater than it reasonably expected from its reliance upon the contours, it incurred significantly increased operational costs for which defendant is liable. Specifically, plaintiff contends that there were material contour errors, that

defendant violated professional standards by not conforming the two types of available elevation data — the more exact survey established elevations with the less accurate topographically derived contours — to the more accurate data in order to correct these errors. Further, plaintiff contends that the standard of accuracy to be applied when there are spot or survey elevations in the same areas, the standard identified by Mr. Bradfield, is one-fifth of a contour interval (a two foot interval in the Plans), and not one-half a contour interval as set forth in the National Map Accuracy Standards (NMAS). (Thus, plaintiff contends that when there is error in the plan contours, that error should be consistent with the error in elevation which, in general, should not exceed one-fifth of a contour interval.) Further, as proof of the existence of contour errors, plaintiff also points to the plotter's placing of a question mark on the manuscript map, his misuse of the lake surface as a control point and defendant's arbitrary adjustments in correcting the level circuits for the mapping of the area.[23]

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23. Plaintiff contends that its evidence showed that the Corps's plotter could have erred in drawing the contours in that:

(1) the original aerial photographs used to prepare the drawings for the Palmer Creek job depict substantial wave action on certain portions of the Lake which could have caused a showing of the Lake at a slightly higher level than was its true level in the affected areas;

(2) the lake level could have varied somewhat at various points on the same date due to the inflow and outflow of rain water and rising Missouri River levels;

(3) the manuscript map indicates that the plotter had problems in fixing some of the contours (the 620 contour line is shown as extending

(Cont'd)

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Plaintiff also maintains that defendant knew that the contours were in error and failed to disclose this fact to plaintiff. It contends that this failure to disclose was both unethical and professionally improper because defendant knowingly hid evidence of a changed condition. Consequently, it contends that the Corps violated its first duty after its investigation and verification of the existence of a changed condition, which is to disclose the results of its investigation promptly.

Defendant vigorously disputes all of these contentions. First, it charges that plaintiff has not demonstrated the existence of any contour errors in the Plans based upon an identified applicable standard. It argues that neither party has fully tested any of the maps or the contours on the Plans to accurately determine whether they do or do not comply, for example, with any, set standard including the NMAS. Defendant states that the only testing plaintiff's experts performed was to review certain points, most of which were along the centerline of the levee, and compare the elevations depicted on the maps with the surveyed elevations to show noncompliance with the one-fifth of a contour standard which plaintiff seeks to have

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into the Lake and emerging on the other side, a "clear mapping error"); and

(4) that the plotter, without notation of error, placed a question mark near one of two large concrete control structures, the 400 structure, indicating that he probably had a problem in determining the proper location of the 620 contour line, yet he did not, in keeping with good engineering practices, require this area or any other questionable areas to be reflown, replotted, resurveyed, or, alternatively, require that a field survey be made of the critical points in the area to remove any doubt about questionable elevations.

the court apply. Moreover, defendant contends that some of the particular areas where plaintiff identified contour "errors" on this basis, were not critical areas such as those west of the lake. Further, the number of spot elevations plaintiff identified were very small in number (normal for such plans). Additionally, defendant points out that a contour crossing over a levee centerline may be off laterally by 40 or 50 feet from the compared survey point due to the scale (one inch equals 400 feet) of the maps. Also, if the contour crosses at an angle to the centerline and two stations are given, the potential for inaccuracy in making a comparison is even greater. Thus, defendant states, assuming that there were errors in the contours, they were not material, the conformance plaintiff has described is not practical, and the court should not hold defendant to any rigid standard of accuracy such as that urged by plaintiff. Defendant alleges that application of plaintiff's standard is particularly unjustified with respect to levee plans where such exactness in elevations is not necessary or reasonably to be expected by experienced contractors. Even if errors in contours exist, says defendant, they are minor and would not have affected the overall validity of the Plans.

Defendant further contends that it did not represent compliance with the NMAS or any other accuracy standard. Thus, it argues that it is immaterial whether the contours on the Plans actually meet the NMAS. Additionally, defendant points out that the Plans included a pertinent disclaimer respecting the accuracy of the contours which stated that they were "approximate only."

Defendant argues that the one-fifth of a contour standard urged by plaintiff, as enunciated by Mr. Bradfield, is not cited in any governmental manual, professional reference work,

treatise, textbook, or otherwise supported in the literature, as an acceptable standard for judging the accuracy of contours. Defendant maintains that, as a matter of practice, neither the Corps nor any other owner has ever applied plaintiff's claimed standard, the one-fifth of a contour level of accuracy standard, simply because there is data available from two sources. It contends that the standard sought to be applied by plaintiff is only Mr. Bradfield's personal standard which has no independent support. Thus, says defendant, it would be entirely unreasonable for this court to adopt and here impose such a strict accuracy standard, particularly for a floodplain. Moreover, it argues that to impose Mr. Bradfield's standard would necessarily ignore the described specific limitation or warning in the Plans that the elevations were "'approximate only." Further, defendant responds that the question mark on the manuscript map merely indicates that the plotter may have had some question in that area possibly due to glare or timber which falls far short of proof of contour errors. Also, defendant maintains that the Corps's use of the lake surface as a control point, a common Corps practice, was not error simply because of possible small differences in lake elevations from one point on the lake to another. Defendant explains that the corrections made in the level circuit were not reflective of any material error which carried over to the contours on the Plans.

Finally, defendant argues that even if it is assumed that there were material contour errors on the Plans, and that for some reason the described disclaimer may not be given any effect and that the proper standard for accuracy is that urged by plaintiff, plaintiff still may not recover because it has failed to prove that it relied upon the contours in submitting its bid. Defendant says that adequate proof of such reliance is a prerequisite to any recovery.

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Contour accuracy is affected by many factors including the height of the airplane, the skill of the pilot, wind conditions when the aerial photographs are taken, the scale used, the accuracy of the vertical and horizontal controls, the type of plotter used and the skill of the plotter in drawing the contour lines. Clearly, the whole technique of developing contour lines from aerial photographs is, at best, imprecise, has well known accuracy limitations, and is still evolving.

The contour data placed on Missouri River levee plans generally is there only to give the contractor an idea as to ground surface elevations, particularly since such elevations can change over time due to erosion or deposition of materials. Also, the obliteration of contours on the Plans was not unusual for levee projects along the Missouri River, where a lot of information must be crowded into a small space on the plans and more important information must be included on the plans. Further, neither the Corps nor private owners normally attach a copy of a manuscript map to a set of plans. In any event, the Corps did make a superficial comparison of the centerline profile data with the survey elevations. Although it found variations, because of the differences in scale, the Corps did not regard the variations as sufficient to warrant any major investigation into potential errors given the limited purpose of the contours being there in the first place.

Further, the Corps viewed the degree of variance between the two forms of elevation data as permitting a greater variance than one-fifth of a contour interval without there being an error in the Plans because (1) it knew of no published requirement in any engineering manual or similar treatise that contour lines must be accurate to such a degree, (2) the fact that no other government agency or private firm requires such accuracy either

and (3) the one-fifth of a contour standard, which Hardwick urges, would require a field survey of the entire area to a three- or four-inch level of accuracy. This level of accuracy would be totally unrealistic, if not impossible, with a site consisting of soft farmland having plowed furrows varying six inches in height, clumps of grass, rivulets and small barriers that can easily change by that much from season to season. In fact, it is obvious that the entire area would have to be graded by a road grader to approach that level of elevation accuracy. Such a requirement cannot be economically justified for a levee construction site.

The court is satisfied that the aerial photos were satisfactory since surveyed points with exact elevations and coordinates were scattered throughout the area, a check against the contractor flying the job before the photos were taken, and that Frank Georgie, the Corps's cartographer who did the plotting for the manuscript map, used standard equipment (a Kelch plotter) and procedures (the slotted template method) within acceptable levels of skill to develop the contours for the manuscript map. The evidence shows that Mr. Georgie, for purposes of trial, checked the original photos for Palmer Creek using the older equipment, and that he found no errors in his notes or any of his work. Although Mr. Georgie first testified that the points fixed by the U.S. Geological Survey (USGS) were more accurate that those fixed by the U. S. Coast and Geodetic Survey (USCGS), he later corrected this testimony stating that the latter's work is more accurate. Mr. Georgie raised the level circuit elevations because of the difference between the two elevations shown by these two agencies, in order to correct for the difference in the accuracy of the two sources, by .46 inches. The bench mark control point used by both agencies was the same, an old Missouri River Commission

monument, but the USGS and the USCGS elevations were slightly different because one used the cap of the monument and the other used the top of the pipe itself. In fact, the court is convinced that the method used by the Corps for plotting the contours, or their replotting, using the aerial photographs was done in conformity with proper techniques and procedures. The Corps's witnesses satisfactorily explained the results of wave action, the presence of trees or vegetation around the lake and other factors which can affect the accuracy of the photos and the contours derived from the photos. The defendant's witnesses also satisfactorily explained the Corps's survey notes with respect to the corrections made in the level circuit reflecting variances between USGS data and USCGS data. Accordingly, the court finds that no errors, but only variances within reasonable limits, resulted from these techniques, and procedures.

Normally, if the owner intends compliance with the NMAS, there is a notation on the documents to that effect. However, the Plans contained no representation of compliance with the NMAS. In fact, the Plans contained no representation of compliance with *any* accuracy standard. Had the Plans contained a representation of compliance with the NMAS, the contours would have been in compliance if they were within one foot of being absolutely accurate.

The United States NMAS, Revised June 17, 1947, Bureau of the Budget, reads, in part, as follows:

> 2. Vertical accuracy, as applied to contour maps on all publication scales, shall be such that *not more than 10 percent of the elevations tested shall be in error more than one-half the contour interval.* In

checking elevations taken from the map, the apparent vertical error may be decreased by assuming a horizontal displacement within the permissible horizontal error for a map of that scale.

3. The accuracy of any map may be tested by comparing the positions of points whose locations or elevations are shown upon it with corresponding positions as determined by surveys of a high accuracy. Tests shall be made by the producing agency, which shall also determine which of its maps are to be tested, and the extent of such testing.

4. *Published maps meeting these accuracy requirements shall note this fact in their legends, as follows: "This map complies with National Map Accuracy Standards."*

5. *Published maps whose errors exceed those aforestated shall omit from their legends all mention of standard accuracy.*

(Emphasis added.)

It is abundantly clear that the above notation of compliance was not affixed to the Plans and that the Plans omitted from the legend any mention of standard accuracy. However, even assuming that the NMAS were applicable, the court's analysis shows that plaintiff has failed to show that the contours on the Plans do not meet NMAS. Further, the NMAS recognize that even with clearly identifiable points on a map, only 90 percent are expected to be accurate within one half of a two-foot contour interval, which is plus or minus one foot when applied to the

plans for the Palmer Creek Project. The level of accuracy of one-fifth of a contour, although listed in the accuracy standards, is for well-defined points only, as opposed to those that are not clearly identifiable.

Additionally, the Plans warned that natural ground depictions on the drawings (the contours) were "approximate only." The word "approximate" means "close to" or "near to." *Webster's Ninth New Collegiate Dictionary* (1984). Thus, no inference of exactness could reasonably have been drawn from the use of the word "approximate." To the contrary, when viewed from the standpoint of a reasonably prudent contractor, "approximate only" meant the elevations depicted were not perfect or exact and that bidders should be aware that there could be some degree of error and nonreliability in the elevations shown, particularly since there was no representation whatsoever regarding compliance with NMAS. Accordingly, the court finds that the "approximate only" limitation did, in fact, serve as reasonable notice to bidders that the contours shown on the Plans had only a limited degree of reliability. Also, a reasonably prudent contractor would have been on notice from the "approximate only" warning and the absence of complete contour data to request the examination of the obliterated contours or to be allowed a reasonable opportunity to independently verify, perhaps through its own surveys, the accuracy of the contours, at least in the more critical areas. Hardwick did neither. Moreover, the obliteration of some contours was quite obvious and typical of levee plans.

Moreover, as a general matter, Corps levee designers do not consider contour errors to be of any great materiality and significance to bidders on river floodplain levee projects. Therefore, in preparing the Plans the Corps, in keeping with its

long-established practice, provided limited contour data on the relevant Plan drawings. The Corps generally makes no attempt to definitively compare or conform potentially conflicting cross-section survey data with contour data. Rather, for clarity, only some cross-section-derived elevations are shown on the Plans. In the Corps's view conformance of differing elevation, data, which plaintiff urges as having been professionally required here, is only needed in designing municipal levees and dams. The Corps's rationale is that since a failure of these types of structures carries a much greater risk of loss of life, greater care and stricter standards are needed for such structures. The court agrees fully with the Corps's view and reasoning on this point.

However, even if the Corps erred, as plaintiff contends, in failing to conform these two types of elevation data to the more accurate of the two, plaintiff still cannot prevail on this issue. First, as the court has discussed above, it is not clear from plaintiff's evidence what conformance would have demonstrated (assuming, of course, that sufficient data was available to make this type of definitive comparison). Second, plaintiff has not proven by a preponderance of the evidence that it actually relied upon the contours in making its bid. The bid documents simply do not support Deneen Hardwick's testimony with respect to Hardwick's reliance upon the contours in preparation of the Hardwick bid. To the contrary, they suggest that the topographic contours were given little or no significance in determining plaintiff's bid. Neither Mr. Rayback's markup of a set of Plans, the bid book, nor the separate bid sheet show by any notes or markings that Hardwick considered the contours in its determination of the dirt quantities or other elements of the bid. Further, Hardwick could not have performed a comprehensive inundation analysis using any erroneous

contours because it simply did not have sufficient information in the Plans, due, in part, to the described obliteration. Also, in its bidding Hardwick clearly assumed a lowering of the lake level to 618.0 MSL during construction. Defendant contends that this fact suggests that Hardwick would not have needed to perform any type of in-depth inundation analysis based upon the Plan's contours since such an analysis would not be warranted with a lake level of 618.0 MSL. In this regard, the Corps's witness, Mr. Gillen, testified that during the December 1977, meeting with Hardwick personnel, they specifically discussed the fact that certain ground elevations, those west of the lake between stations 270 and 300, were between elevations 619 MSL and 620 MSL while the lake was at elevation 620.5 MSL. Thus, defendant contends that Hardwick had to have recognized that the Plans contained some erroneous contours which were not critical to it because of its plan to lower the lake. Plaintiff's witnesses deny that these discussions occurred at the meeting. In any event, Hardwick made no complaint of any contour errors at that time. The facts show that it later went forward with operational changes hereinafter discussed.[24]

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24. The court has carefully considered the parties' evidence regarding the Corps's actions involving its January 1978 investigation of the Morris Memo, the possibility of contour errors and the failure of the Corps to communicate to plaintiff any information regarding that investigation. Mr. Gillen testified that if the Corps had known at that time that Hardwick was going to claim a changed condition under the Contract, the Corps would have immediately brought the Contract Administration Branch and the Office of Counsel into the matter for a determination of the merits of the contractor's claim. Then, under the Corps's normal procedure, if these branches determined that the claim had merit, the Corps would have requested that the contractor submit a proposal. If that proposal was reasonable, it would have been accepted and been made a part of the contract as a Clause 3 change. However, if

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Although the Corps learned of possible contour errors in December 1977, and conducted an investigation of the matter the following month, the Corps never advised plaintiff in writing that the investigation had been undertaken. However, the court finds defendant's explanations for these actions to be reasonable and not the result of an improper, bad-faith effort to cover up a Plan defect which might result in a changed condition claim. The Corps's investigation included a site visit by responsible Corps officials, and, unfortunately, no record was made of that visit. However, it is the purest speculation to attribute bad-faith motives to defendant simply because of the lack of records. Sufficient proof is simply lacking for this court to find that defendant's conduct was improper and constituted bad faith. The Corps's witnesses convincingly testified that in this case the Corps officials responsible for the Project believed in good faith that any errors in the contour lines established by aerial photogrammetry were within permissible limits. The court finds in these circumstances that plaintiff has failed to prove that defendant violated professional standards with respect to the contours by failing to disclose the results of its January 1978 investigation of possible contour errors.

The evidence is convincing that Hardwick's bid was not premised upon the contours on the Plans. Since Hardwick did

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it was unacceptable for any reason, perhaps from a cost standpoint, the Corps could have simply terminated the Contract for convenience. Thereafter, the Corps would have sought another way to do the job because it "would not have been a good value for the taxpayers." Also at that point, as another option, Mr. Gillen said the Corps might have redesigned the levee. Various alternatives would have permitted the work to go forward. Thus, Mr. Gillen's testimony adequately explained the background for the Corps's action in sending the Morris memo to the Engineering Division to confirm the alleged conditions.

not rely upon the contours, any contours errors are immaterial. However, the court is satisfied that defendant violated no professional standards in failing to conform the two types of elevation data, or because the contours on the Plans were not in compliance with the one-fifth of a contour standard urged by plaintiff. In any event, the court categorically rejects application of that overly strict and unrealistic accuracy standard in this case. The court also finds that plaintiff suffered no harm as a result of any alleged contour errors and that plaintiff's related claims are all without merit under any theory of liability.

Superior Knowledge Claim

Plaintiff next contends that because a substantial amount of highly relevant, vital and unique information was intentionally omitted from the contract documents, or otherwise withheld from plaintiff, defendant is liable to plaintiff for a breach of contract under the doctrine of superior knowledge. The undisclosed data upon which plaintiff relies to support its superior knowledge claim includes much of the same data upon which it relies to support its claim of defective specifications — the omission of old Missouri River channel locations in the levee area, Missouri River slope data (showing that the river sloped about 3/4 foot per mile),[25] complete topographic maps, CRP data, the GDM, rating curves and back-water data relating to Palmer Creek, inclusion of symbols for the swampy areas, drainage data, rainfall data, data showing high Missouri River stages and additional high lake levels.

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25. The river's slope is not static but actually varies in the distance between Glasgow and the mouth of Palmer Creek. For example, it is .77 feet per mile at some points and .98 feet per mile at others.

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Defendant counters that none of the information plaintiff relies upon to invoke the superior knowledge doctrine is vital or unique. Further, it contends that because all critical or vital information was adequately disclosed, explicitly or implicitly, in the Plans and field notes or was known or should have been known to an experienced and reasonably prudent contractor, plaintiff's reliance upon the superior knowledge doctrine is misplaced and that doctrine is simply unavailing. Further, defendant maintains that there was a sufficient disclosure to bidders in the Plans (coupled with the information that they could have developed from a reasonable site visit and area investigation) to have alerted them to potential wetness of the job site. Defendant states that bidders could have asked the Corps for all Corps hydrologic and hydraulic studies, or other related data, and if that data was not timely produced, could have elected to withdraw from the bidding process. Defendant maintains that, in any event, its hydrologic and hydraulic data was complex and, therefore, would only be meaningful to a highly trained and qualified professional.

A contractor, under the superior knowledge doctrine, can recover for breach of contract based upon the government's failure, as a party to the contract, to disclose vital information concerning the performance of the contract. *Petrochem Serv., Inc. v. United States*, 837 F.2d 1076, 1078-79 (Fed. Cir. 1988). The Federal Circuit has enumerated the necessary elements for a superior knowledge claim as follows: (1) the contractor undertook performance without vital knowledge of a fact that affects the contractor's performance costs or duration; (2) the government was aware that the contractor had no knowledge of and had no reason to obtain such information; (3) any contract specification supplied misled the contractor, or did not put it on notice to inquire; and (4) the government failed to provide

the relevant information. *GAF Corp. v. United States*, 932 F.2d 947, 949 (Fed. Cir. 1991), *cert. denied*, 112 S.Ct. 965 (1992) (concerning whether the government had a duty to warn an asbestos producer of hazards in its product); *Servidone Constr. Corp. v. United States*, 19 Cl. Ct. 346, 375 (1990), *aff'd*, 931 F.2d 860 (Fed. Cir. 1991).

An implicit element in the above formulation is that the government actually possessed vital information. *Johns Manville Corp. v. United States*, 13 Cl. Ct. 72, 132-33 (1987), *vacated on other grounds*, 855 F.2d 1571 (Fed. Cir. 1988); *American Ship Bldg. Co. v. United States*, 228 Ct. Cl. 220, 225, 654 F.2d 75, 79 (1981). Although the government actually possessed more detailed data than was made available to bidders, the court is convinced that none of the data relied upon by plaintiff to support its superior knowledge theory were truly unique or vital. The following analysis of the particular items relied upon by plaintiff will show why the court reached this conclusion.

First, defendant's evidence showed that the GDM contained no prediction of actual rainfall or high Missouri River levels that might occur at any time in the future. Moreover, all of the information in the GDM was known or should have been known to an experienced contractor, was otherwise available to bidders or could have been discovered by a reasonably prudent investigation. As previously discussed, the GDM was developed solely for purposes of designing the levee and, in keeping with the Corps's past practice, was never intended to be a contract document or otherwise made available to contractors. The court finds, therefore, that this document contained no vital or unique information.

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Second, defendant's CRP data was neither vital nor unique. Defendant's evidence demonstrated that the Corps's CRP data was developed for specific use in construction of structures within rivers to control siltation and river flows. CRP data is not provided to bidders of levee projects because their contracts do not involve building a levee within a river. CRP data, had it been provided to plaintiff, would not have been of any more use in determining potential inundation of the job site than river slope data, which, if not already known by plaintiff, was available through local inquiry. Accordingly, the court finds that the Corps's CRP data, because of its limited purpose and use, was not vital or unique and affords no support for application of the superior knowledge doctrine in this case.

Third, the omitted contours were not vital information. The manuscript map containing all of the contours, if provided to bidders, would have made little or no difference in their bids. There was no warranty on the map as to any level of accuracy. Moreover, the evidence is quite convincing that plaintiff, in preparation of its bid, never relied upon the contours shown in the Plans. Accordingly, in this case, it would have made no difference at all had all contours been shown on the Plans. Again, as a matter of practice, in preparation of final plans for low risk Missouri River levees, designed essentially to protect agricultural lands from flooding, the Corps commonly does not provide complete contours for the construction site. This practice appears to us to be reasonable in view of the low risk of loss of life usually attendant to such levee construction when compared with the much greater risks which inhere in the building of municipal levees and dams. Under these facts, the court finds that obliteration of some contours from the Plans and the failure to furnish all contours was not the withholding of vital and unique information.

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Hardwick contends that there was important information in the Corps's comprehensive volumes of field books which it did not have a reasonable opportunity to examine prior to bidding because the notice from the Corps as to the existence and availability of the field books was not received by it until only two working days prior to the bid due date. This argument is not persuasive. Actually, the notice was mailed to all bidders about one week prior to the bid due date. There was perhaps a few days delay in postal delivery of the notice. However, as an experienced contractor, Hardwick knew that important information about job site conditions could be expected to be in the Corps's field books. Obviously, two days was not a reasonable time for bidders to fully examine the field books. However, a prudent contractor under these circumstances, knowing the potential importance of the field books to an accurate bid, would have requested a few day's postponement of the bidding to permit a reasonable examination of the field books. Hardwick sought no opportunity to examine the field books.

Plaintiff also contends that it was not required to examine the field books because they were not contract documents attached to the solicitation and, thus, no warranties of adequacy or reliability applied to them. The court must also reject this argument. The field books are "indications" of what site conditions a contractor might reasonably expect to face at the site. "Indications" generally include information both in the solicitation itself and in documents to which bidders are directed by the solicitation, as here. *Hunt & Willett Inc. v. United States*, 168 Ct. Cl. 256, 265, 351 F.2d 980, 985-86 (1964); *Flippin Materials Co. v. United States*, 160 Ct. Cl. 357, 365-68, 312 F.2d 408 413-15 (1963); *Union Roofing and Sheet Metal Co.*, 90-1 B.C.A. ¶ 22,505 (PSBCA 1989) (roof-surface mesh

indicated by drawing available for review at contracting agency), *aff'd without op.* 909 F.2d 1496 (Fed. Cir. 1990). Consequently, Hardwick may not be excused from its failure to examine the field books. Accordingly, the court finds that, under the circumstances, the information in the field books was reasonably available to Hardwick and may properly be imputed to Hardwick, although not warranted as to its adequacy or reliability. However, even if Hardwick was not imprudent in failing to examine the field books or seek a reasonable opportunity to do so, as the court's later analysis shows, the information in the field books was not of sufficient vitality or uniqueness so as to form the basis of a claim of withholding of superior knowledge.

The field books undoubtedly contained useful information relating to potential wetness of the job site. However, the court finds that they were "available" even though plaintiff may have had only two working days to examine the field books prior to the due date for all bids. The Corps actually sent bidders a notice of the availability of the field books seven days prior to bidding. This was a good faith effort to put bidders on notice of the existence of these field books and allow bidders a reasonable opportunity to examine them. Although plaintiff did not receive this notice in time to permit a fair examination of all of the books (they consisted of a number of volumes), the court can see no reason why plaintiff, as well as all other bidders, could not have requested postponement of the due date for receipt of bids to allow more time to make a reasonable examination of the field books. None did so. Finally, even though the field books may have contained additional information which, arguably, would have been of some value to bidders (mainly because of the additional swamp symbols, lake levels and ponding areas shown), this information was neither vital nor

unique since the information generally could have been derived by an experienced and prudent contractor from a careful study of the Plans in conjunction with a reasonable site visit and local investigation. Therefore, the court finds that the notice as to the availability of the Corps's field books was adequate, that the information in the field books may be imputed to plaintiff and, accordingly, that the alleged unavailability of the field books does not support plaintiff's withholding of superior knowledge claim.

With regard to defendant's failure to disclose river slope data, the court is satisfied that at least one if not more persons in plaintiff's organization, actually did have reasonably accurate knowledge of the slope of the river from Palmer Creek to the Glasgow gauge (about 19 miles downstream from the job site). Mr. Rayback, who did the "takeoffs" from the plans for Hardwick, must have known the slope of the river because the hydrograph data in the Plans, which can only be used if the river slope was known, was unquestionably used by him in preparation of Hardwick's bid. Thus, the evidence suggests that plaintiff actually knew, prior to submitting its bid, that the river sloped from the job site to the Glasgow gauge approximately one foot per mile.[26] However, assuming that Hardwick did not actually know the slope of the river, that slope was common knowledge in the District. Mr. Deneen Hardwick admitted that at the time of his site visit, he did not inquire of local residents about the slope of the river. Local residents, including Mr. Manson, knew this slope to be approximately one foot per mile. Thus, plaintiff cannot legitimately contend that the government was aware that plaintiff had no knowledge of the river slope

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26. The actual slope of the river from the job site to the Glasgow gauge is all average of nine inches of fall per mile.

data and had no reason to obtain such information. To the contrary, the Corps had good reason to believe that plaintiff, either because of its own investigation or because of its many years of experience in river levee work, would know something as basic to high risk levee construction in the river's floodplain as the slope of the river.[27] Since Hardwick either knew or should have known, through its own investigation and site visit, the well known, rule-of-thumb slope of the river, plaintiff cannot charge defendant with the withholding of superior information for its failure to disclose river slope data. Accordingly, the court concludes that such data was not vital or unique information and that defendant's omission of river slope information from the Plans was not the withholding of superior knowledge.

Plaintiff's claim that defendant's failure to disclose the exact location of the old Missouri River channel constituted the withholding of vital superior knowledge is also without merit. This claim is premised upon the argument that the soils in the channel consisted of a thin layer of clay over a deposit of sand; such soils were less consolidated and, therefore, that the levee's foundation was much weaker (had a lower shear strength and less bearing capacity) where the levee's alignment crossed the channel. Unquestionably, the geologic history of soils deposited in a floodplain can have a direct relationship to the strength and bearing capacity of these soils.[28] However,

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27. As discussed elsewhere in this opinion, general slope information alone would not be sufficient to permit anyone to determine accurately the various areas of potential job-site inundation because such data is only one among many complex factors which must be considered in making a meaningful inundation analysis of a given area.

28. The shear strength of soils is determined by such variable factors as drying and wetting, ground water fluctuations, historical overburden pressure, physical and mechanical properties of the soils, origins of the soils and the ways in which they were deposited.

defendant's evidence showed, convincingly, that the Corps's old Missouri River maps, some dating from the 1880's, did not contain vital or unique information.

The court accepts the fact that several of the levee failures did occur in the old Missouri River channel. But such failures were not shown by plaintiff to be due entirely to the undisclosed presence of the old channel. Some of the failures occurred outside the old channel. The court is satisfied, after a careful review of plaintiff's evidence regarding this issue, that when a heavy layer of clay is placed on top as fill, the resulting compaction may cause hydrostatic pressure when, for whatever reason, the groundwater level rises. To the extent that these events occurred during construction of the levee, they could have contributed to foundation weakness and one or more levee failures. But, this fact is not determinative of the question.[29]

Defendant offered the testimony of an expert, John A. de Monte, who investigated the levee failures for the Corps, to prove that the failures did not extend to the foundation. Mr. de Monte testified that he performed penetration tests of the wet, remolded clays in the levee, examined the Atterberg limits (derived by subtracting the plastic limit from the liquid limit to obtain the plasticity index), performed compressive strength tests (using an "unconfined" sample to the point of failure) and concluded that the clays within the levee had incurred such a loss of strength that they failed. Further, he said that, based upon his comparative compressive strength tests, he had

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29. It is undisputed that, pursuant to an agreement with the Corps, Hardwick repaired all five levee failures and was paid in full for this work. Therefore, the parties are contesting the cause of the levee failures only because of the implications to be drawn from such a determination as they relate to defendant's nondisclosure of the exact location of the old Missouri River channel.

determined that the clays in the foundation were considerably stronger than those in the levee. He also said that at the Palmer Creek site there was a layer of clay over sand which can allow the water to rise in the sand in response to river fluctuations. The result is a weakening of the ground for heavy equipment.[30]

Mr. de Monte also explained other hydrologic occurrences relevant to this issue. He said that "pore water pressure" is a phenomenon which pushes grains of soil apart and lowers their strength. He stated that he had found some evidence of excess hydrostatic pressure at some points at the job site which were sufficient to affect the stability of the soils. He said that in several locations a zero to five foot thick clay blanket existed, but his tests showed that underneath were strata of sands and silts. However, he said that these clay strata were not homogeneous but were highly plastic clays with liquid limits ranging numerically from 90 to 110. Mr. de Monte said that this range should have been some warning to a contractor because typically these ranges are 60 to 80. Normally, he said such plastic clays will shrink and crack as they dry which allows water to fill the cracks. If the water cannot rise, however, he said that these clays appear like a piece of "bull's liver," or the surface of a water bed. Thus, a "pumping action," similar to that which Hardwick experienced, can occur when pressure is applied.[31]

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30. Mr. de Monte's testimony did not address the possibility that water can rise from the same cause, or other causes, and result in a weakening of the levee's foundation which could also cause or contribute to a failure. Further, his testimony failed to obviate the possibility that the foundation, to some degree, could have moved out and around holes which the Corps drilled prior to taking its photos.

31. Mr. de Monte defined "effective pressure" as being equal to "total pressure" minus "neutral pressure." He maintained that the

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In Mr. de Monte's opinion no disclosure regarding the location of the old channel was necessary because the Plans were adequate to warn of poor soil conditions and were typical of the types of data presented in Missouri River levee plans. He opined that he found no significant difference in the soils in the foundation and outside the foundation. He testified that there were only 12 failures in the levee, both during and after construction, or one failure per mile. He said that given the strength of the clay soils, the failure rate was an "extraordinary" performance.[32]

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supporting capacity of the ground surface is destroyed when effective pressure is reduced. Supporting capacity is effected by heat, drying effects, freezing and thawing and excess hydrostatic pressure. At the contact point between sand and clay layers, the grains are often pushed apart adding to the instability of soils. Remolding of soils, inundation, rain and wet conditions can result in a severe loss of soil strength. Remolding of soils in haul roads occurs with heavy wheel loads. In Mr. De Monte's opinion some degree of remolding could have been anticipated from the information in the borings. Further, after being disturbed, soils require time to recover their strength. That recovery is more gradual in clays. He said that highly plastic gumbo clays, such as those which existed at the Project site, should always be tested by the contractor before bidding. However, some contractors do not do this, but instead rely upon general knowledge of the characteristics of clays under adverse weather conditions.

32. Mr. de Monte considered Peter Lenzini's analysis of the cause of the levee failures to be flawed because Mr. Lenzini (1) used a static load factor to determine bearing capacity; (2) did not consider the dire changes that can occur from adverse weather; and (3) based his analysis only upon the borings when he should have considered other factors, including the effect of desiccation and use of heavy equipment.

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Plaintiff argues that Mr. de Monte took his borings approximately 10 years after completion of the levee. Thus, plaintiff contends that his tests do not account for the fact that the foundation during that period had had time to consolidate. However, Mr. de Monte countered that such a short period for soil consolidation would not account for a "vast difference" in the relative strengths of the soils in the foundation and in the levee, as proven by his tests. He admitted that a levee contractor might not routinely incur the expense of hiring a geotechnical engineering consultant before bidding. However, he said that soil boring data is only good for the specific times that such data is obtained. He emphasized that that rule is particularly applicable here because of the fluctuation of the groundwater at the Project site.

Defendant contends that the water levels in the borings were obviously taken years earlier than the date construction began. Therefore, it argues that the boring samples were not necessarily representative of conditions that existed when the levee failures occurred. Thus, it states that a reasonably prudent contractor would not rely upon such boring data without verifying the accuracy of the data by taking its own borings.

The evidence shows that soil strength is dependent upon many factors, including the origins of the soils, the types of soils, the particle sizes represented and their methods of deposition. In short, soil strengths are not dependent only upon whether the soils were recently deposited. The testimony of defendant's expert witnesses made it clear that adequate soil borings and tests of soil samples provide a much more reliable indication of soil strengths than mere general knowledge about when the soils may have been deposited or the fact of their deposition in an old river channel. Defendant's expert testimony

also made it clear that soil boring data supplied in the Plans adequately informed bidders of soil strengths and subsurface conditions. Thus, a disclosure of the exact location of the old river channel would have been cumulative, unnecessary and, therefore, not vital to Hardwick's performance of the Contract.

Based upon defendant's photos and expert testimony, the conclusion is inescapable that some failures occurred, to some extent, in the embankment. Thus, the failures were not due solely to the failure of weaker soils in the foundation, where the old river channel existed. Defendant's testimony demonstrated that the most scientifically reliable method for measurement of soil strengths is to perform laboratory examinations of representative soil boring samples, particularly, if the samples are taken from the construction site immediately prior to construction. Thus, if testing of an adequate number of soil samples is performed, no significant advantage is present in providing old river channel information in the plans. Also, since the Plans contained a reference to the presence of a sunken ship in one of the borrow areas, Hardwick was given due notice that the old channel went through the site. Consequently, the exact location of the old Missouri River channel, which could only have related to the foundation's strength, had no bearing upon the cause of the failures, was not vital information under the facts in this case and, thus, omission of the old channel's location from the Plans does not support plaintiff's claim based upon the superior knowledge doctrine.

Further, the court has carefully considered all of the parties' related expert testimony and exhibits respecting this issue, including the photos and Mr. Whaley's testimony. Based upon defendant's evidence, it is clear that some of the failures actually occurred outside of the old channel. Further, Mr. de Monte's

soil tests, performed prior to trial, showed that soils in the old channel were remarkably consistent and uniform, with no difference in strength when compared with those outside the old channel. His tests also showed that some of the soil samples taken from outside of the old channel were actually weaker than those taken in the old channel. Accordingly, the court is convinced that the soils in the old channel, by 1977, had had time to become consolidated to the extent that the soils in the old river channel were generally equal in their respective load bearing capacities to those outside the channel.[33]

The weight of the evidence, taking into account the testimony of Mr. de Monte and Peter Lenzini (repectively plaintiff's and defendant's experts), has led the court to conclude that the levee failures occurred, in varying degrees, both within the levee's embankment and in the foundation. Further, the court concludes that they were probably due to a combination of causes including a lack of compaction due to the placement of wet materials in the levee (permitted by the uncompacted fill alternate), the removal of lateral support (perhaps stemming from the Corps's approval of the VECP) and foundation failures caused by high water tables which

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33. Although the Corps drilled holes and placed toe stakes outside the levee slides to attempt to show that the failures occurred within the levee and not in the foundation, this evidence is not conclusive since much of the movement may have already occurred before the placement of the toe stakes and holes. Further, the failures occurred within a few days of the levee being "topped out." Failures which occur at that period in levee construction are typical of undrained clay failures. Moreover, the failures were not protracted — they ended within a matter of a few days. This fact demonstrates that equilibrium was quickly reached and the failures ceased, which is what usually happens with embankment failures.

effected a weakening of the foundation soils. Conversely, the court finds that the failures were not due to Hardwick's negligence in constructing the levee, particularly since the Plans allowed the uncompacted fill alternate and set no moisture content and density limits for fill materials.

Finally, the Plans actually warned that at least a fairly recent channel of the river may have traversed the levee's proposed alignment by specifically noting the possibility of the presence of an old sunken ship in one of the borrow areas. Moreover, a reasonably prudent contractor, knowing that the levee involved approximately 11 miles of construction in a floodplain, would have assumed that the river at some past time had occupied every part of the floodplain and would have bid accordingly. Hardwick, as an experienced contractor, should have made this same assumption and bid accordingly. Thus, any provision containing old river channel information would have informed a contractor of what that contractor already knew or should have known about the meanderings of rivers in floodplains. Such information would have been historically "interesting" to an experienced contractor but not material to its bid.

The court finds that the Corps's failure to disclose the exact location of the old Missouri channel was not tantamount to the withholding of superior knowledge from plaintiff. Accordingly, the levee failures are not a proper claim item and have no relevancy to resolution of any central issues in this case.[34]

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34. Unquestionably, the failures were due, in part, to the low shear strength of the soils placed in the fill at the location of these failures. Most of these soils in the failure areas were cast on the levee with a very high moisture content and without any minimum level of compaction, as permitted under the uncompacted fill alternate.

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Plaintiff alleges that defendant had generated rating curves and had made specific studies relating to the back-water effect which were not disclosed to plaintiff. Plaintiff contends that this nondisclosure also constituted the withholding of superior knowledge. Defendant vigorously opposes this contention. The extent of a particular back-water effect cannot be determined merely from the fact that it is generally known that when a river rises, back-water flows may occur in an unprotected creek, at the confluence of that creek with the river. In fact, it is logical to conclude from the evidence presented in this case that the extent of the back-water effect in any creek, resulting from that creek's flow into a river at a specified upstream point (upstream from its confluence with the river), assuming a particular flow rate, would depend upon that point's elevation and distance from the river, upon the configuration of the surrounding land, upon depth of the creek, upon obstructions in the creek, upon its slope, upon curves in the creek, and upon many other variables. Thus, determination of the extent of the back-water effect at any given point involves complex topographic, physical and hydrologic factors. From the evidence presented, the court would have difficulty in finding that any contractor, no matter how experienced or knowledgeable, could have accurately, from the Plans and all of defendant's data, known the extent of the back-water effect from the Missouri River at any given point in Palmer Creek. This conclusion is based upon the evidence presented, but is also supported by the court's brief search of published definitional sources relating to the back-water effect. Further, because of the complexity and multiplicity of the various factors involved, the court doubts that the Corps itself, either in 1977 or today, has developed this ability to any appreciable extent. In fact, from the hydrologic and hydraulic data developed prior to bidding, it is apparent that the Corps had only a general idea, but no clear or

specific knowledge, about the potential inundation of this site during job performance due to the back-water effect.[35]

In short, hydrologists, even with present technology, can do little more than develop what amounts to a rough estimate of the potential inundation at any given location that might result from the back-water effect. Further, the difficulty of making this determination would have been compounded by the fact that the old Palmer Creek channel outlet into the Missouri River (which was not shown on the Plans) was approximately a mile downstream from the discharge point

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35. The court is generally familiar with the Corps's development and general reliability of its HEC I and II models, having decided a case in which the existence of such models was a central factor. *Leath v. United States*, 22 Cl. Ct. 467 (1991). This background and the court's brief research of the published literature amply supports the court's conclusion that the Corps possesses the ability only to generally predict the presence and extent of back-water (using its one-dimensional computer model analysis). *See FESWMS-TX Two-Dimensional Analysis of Backwater at Bridges: User's Guide and Application*, Center for Transportation Research, Research Report 314-1, Larry W. Mays and Cheng-Kang Taur (1983). In brief, engineers use a 1-dimensional backwater prediction tool to assist them in construction of bridges and dams which might cause a back-water effect. Knowing that the back-water effect will occur, for example from a bridge or dam project, the Corps's computer model prediction really does nothing more than alert the Corps's engineers to a potential problem. Thus, being alerted, they may decide to change certain aspects of a bridge or dam design in order to minimize the potential for creating back-water (*e.g.*,bridge support locations may be placed further apart, tapered, or otherwise altered to permit water to pass more easily under the structure). In this case, merely predicting the presence of back-water without more specific data is tantamount to predicting that the area under consideration will have a tendency to flood.

indicated in the Plans.[36] Thus, whatever back-flow studies which the Corps may have developed for Palmer Creek, prior to bidding, would not necessarily have applied to Palmer Creek once it had been rechanneled upstream as the work progressed.

Clearly, defendant had developed no *definitive* back-water studies which it withheld from plaintiff. Whatever studies it had developed cannot be considered as "vital" or "unique" information. Plaintiff already knew that the site is situated in a large floodplain. It also knew from the levee's design, which included two rather large concrete control structures — one with automatic flapgates to protect against flooding and back-water — that when river levels were high, back-water would be a likely and possibly frequent occurrence. *See Utility Contractors, Inc. v. United States*, 8 Cl. Ct. 42, 50 (1985), *aff'd*, 790 F.2d 90 (Fed. Cir. 1986) *cert. denied*, 479 U.S. 827 (1986). Accordingly, the court finds that plaintiff has not demonstrated that the Corps possessed, but withheld, unique and vital back-water studies or related hydrologic data.

Plaintiff also contends that the Corps knew, but failed to disclose, the fact that lake levels would fluctuate, and that it was misled simply by the fact that only one level was shown in the Plans. However, this argument disregards the fact that there were exact dates shown for the lake levels included in the Plans and that there was no representation that those levels would apply throughout construction or during any given period. Hardwick's assertion that it assumed, merely from the showing of three lake levels in the Plans, that there would be no

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36. Palmer Creek, prior to completion of the Palmer Creek levee, ran parallel to the Missouri River before turning south and emptying into the river.

significant fluctuation is simply not credible, particularly when there was a major creek flowing into the lake and there was or had been a control board at the weir to assist in raising or lowering the lake. It would have been obvious to an experienced contractor that during periods of heavy rain, the lake's level could be as much as one or two feet above the height of the weir. During more normal rainfall conditions, unless the lake is losing more water than is coming into it, the lake's level to an experienced contractor would reasonably be expected to be slightly above the height of the weir. While the Corps undoubtedly knew the potential adverse effects from high lake levels, those same adverse effects should have been obvious to an experienced and prudent levee contractor.

In sum, had the Corps made available to bidders all of the described data above, undoubtedly they would have been better informed. However, all of the information was either known, should have been known by an experienced and reasonably prudent contractor, or could have been discovered by such a contractor if he exercised due diligence. Moreover, with respect to most of the data, plaintiff has failed to show that the Corps should have known that plaintiff did not already know or have access to the information. To reiterate, plaintiff knew that this Missouri River floodplain was subject to frequent and heavy rains, that an old Missouri River channel (or channels) could have been at almost any point on the levee's alignment and was very likely to cross through one of the borrow areas, that back-water is a common phenomenon and at this site could have been expected to occur at less than bank-full conditions, that river stages regularly exceeded bank-full conditions, that lake levels would likely fluctuate significantly, and that inundation of low areas in this floodplain would be quite common during construction. Thus, when viewed from the

standpoint of an experienced and reasonably prudent levee contractor, contractually committed to building a large earthen levee in a broad Missouri River floodplain, the court concludes that Hardwick either already knew or should have known all or substantially all of these allegedly critical elements of information not disclosed in the Plans or in other data furnished to bidders.

The law is clear that the government is not required to act as a fiduciary toward its contractors. In fact, a contractor may not, with impunity, simply rely upon the adequacy of the hydrologic and similar technical data presented to it by the government. The holding in *Utility Contractors, Inc. v. United States*, 8 Cl. Ct. 42, 52 (1985), is particularly pertinent in this regard. There the court stated:

> In this case it is clear that any "knowledge" of the principles involved here, *i.e.*, hydrology and weather, is not unique to defendant. . . . If plaintiff failed to consult a hydrologist or review past area weather information, . . . such failure is indefensible.

Prior to bidding, plaintiff obviously had the financial capacity to employ a hydrologist as a technical advisor and to make the necessary studies to sufficiently reveal the risks due to a high groundwater table, the proximity of the job to the lake, Palmer Creek and the river, any rough estimate of potential inundation from the back-water effect, excessive rainfall, flooding and the like. If a contractor does not have a reasonably sufficient time to review available Corps data or develop pertinent data for itself through independent studies of samples deemed necessary to an accurate bid, it may not let the matter rest there but must respond reasonably to what is needed and is

obviously missing. Therefore, the court concludes that plaintiff cannot shift to defendant the blame for its own inaction and failure to fully investigate prior to bidding all of the potential job-site wetness problems which were so obviously inherent and even apparent in this floodplain levee job.

Finally, with respect to plaintiff's superior knowledge claim, cases in which courts have actually found that the defendant failed to disclose superior knowledge may be easily distinguished. In *Petrochem Serv., Inc. v. United States*, 837 F.2d 1076, 1077 (Fed. Cir. 1988), the contractor entered into a contract with the government to remove spilled oil from a 500 million gallon tank. The government's engineering department knew that approximately 21,000 gallons of oil had spilled, but did not put this figure in the bid specification. The contractor, upon making an on-site visit, estimated that approximately 6000 gallons of oil had spilled. Consequently, it put the 6000 gallon figure in the contract bid and calculated the bid price based upon that approximation. Its low bid resulted in an award of the contract. As a result of this miscalculation, the contractor lost money since the actual cost of performance was materially higher than the contract price. In its suit the plaintiff claimed, under the superior knowledge doctrine, that the defendant's failure to disclose the approximate amount of spilled oil was withholding of vital information. The trial court's opinion upheld the claim on the superior knowledge rationale. Subsequently, the Federal Circuit affirmed this decision reasoning that defendant's knowledge was specifically quantitative and clearly would have had a material effect on the contract price. Thus, it reasoned that this knowledge should have been disclosed. In the case at bar, however, none of the information which defendant possessed was specifically

quantitative.[37] Further, even if the alleged information had been disclosed to plaintiff, none of it would have had a material effect on the contract price. The information here relied upon by plaintiff was certainly generally known or should have been known to an experienced levee contractor. Thus, the decision in *Petrochem* is distinguishable on the facts.

In *Granite Constr.*, 24 Cl. Ct. at 748-53, the court comprehensively reviewed many of the cases in which plaintiffs have sought recovery premised upon superior knowledge claims. This court need not repeat in this opinion that analysis of the relevant case law, which the court cited in denying recovery upon the basis of the withholding of superior knowledge. Suffice it to say that this court's own analysis of the facts and law in this case, as it relates to this issue, is in accord with the court's findings and conclusions in *Granite*. Therefore, the court finds that the cases relied upon by plaintiff and those revealed by the court's research, which imposed liability upon the government based upon a claim that the government had withheld superior knowledge, are, like *Petrochem*, distinguishable on the facts or are otherwise inapplicable. *See also Potashnick v. United States*, 123 Ct. Cl. 197, 105 F. Supp. 837 (1952); *Helene Curtis Industries, Inc. v. United States*, 160 Ct. Cl. 437, 312 F.2d 774 (1963); *J. A. Jones*

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37. Obviously, the vitality of any allegedly withheld information is always a question of degree. In this case the plaintiff has failed to convince the court that any of the relied upon data, Lake levels, the GDM, CRP data, rating curves, river slope, old Missouri River channel locations, field notes, additional contour data from the manuscript map or any other data allegedly withheld by the Corps, were sufficiently definitive and quantified to have been of significant value over the information that plaintiff already knew or should have known as an experienced contractor.

Constr. Co. v. United States, 182 Ct. Cl. 615, 390 F.2d 886 (1968). In fact, the court's research has revealed no case directly on point which supports plaintiff's arguments with respect to its superior knowledge claim.

Thus, the facts presented in the case at bar "are not within the lines of development in the case law." *Granite Constr.*, 24 Cl. Ct. at 750. Specifically, defendant in this case made no affirmative representations to bidders that they had been given the best information available, no representations as to how the work was to be performed, no representations about the work that would be made erroneous in the absence of the withheld information, no statements that affected the truthfulness of any data (including the soil borings), no statements that created a false impression or inaccurate picture of the work and no representations which led bidders into a ruinous course of action. Further, the facts in this case demonstrate that defendant did not know or have reason to know that plaintiff lacked vital information, or that, because of its lack of information, plaintiff was stepping into a trap. To the contrary, everything defendant knew about plaintiff and its expertise as a levee contractor would have led it to reasonably believe that plaintiff would have exercised due diligence — *i.e.*, performed a comprehensive and knowledgeable site visit and investigation of critical aspects of the work, and, accordingly, would have had available prior to bidding the information which such a site visit and investigation would have produced. Moreover, defendant's knowledge of plaintiff's capabilities, based upon previous successful Corps projects, would have led it to conclude that plaintiff, prior to bidding, actually knew that the Palmer Creek site very likely would experience severe wetness problems should unusual weather conditions occur, such as excessive rainfall, high levels in the

lake, river flooding, higher than normal groundwater, ponding and back-flows up Palmer Creek. Nor is the government a guarantor against poor judgment with respect to methodologies selected by the contractor. As this court has held in other circumstances, any misleading that occurred was due to plaintiff's own unreasonable assumptions. *McCormick Construction Co. v. United States*, 18 Cl. Ct. 259, 267 (1989), *aff'd*, 907 F.2d 159 (Fed. Cir. 1990) (unpublished op.); *Mojave Enters. v. United States*, 3 Cl. Ct. 353, 358 (1983).

It is also clear that even if plaintiff had been given all of the withheld data which plaintiff alleges was vital and unique, the only information that would have deterred plaintiff from entry into the Contract would have been actual knowledge — an obvious impossibility — that exceptionally bad weather would occur at the Project over a protracted period during construction. Finally, were the court to impose any duty of disclosure upon defendant under the facts of this case, such imposition would, in effect, reallocate the performance risks normally shouldered by a contractor under the terms of a contract of the type here presented, and would oblige defendant to inform the contractor of what it ought to know. *Intercontinental Mfg. Co. v. United States*, 4 Cl. Ct. 591, 599 (1984); *American Ship Bldg. Co. v. United States*, 228 Ct. Cl. 220, 226-27, 654 F.2d 75, 79-80 (1981).

Thus, the weight of the evidence shows, most convincingly to this court, that this is not a case in which defendant had vital, superior knowledge and knowingly suppressed it, thereby misleading plaintiff to its detriment. Nor is this a case where the balance of knowledge was clearly so one-sided in favor of defendant that Hardwick was misled into a ruinous course of action by governmental silence or non-disclosure. *See*

Hardeman-Monier-Hitcherson v. United States, 198 Ct. Cl. 472, 478-79, 458 F.2d 1364, 1365-66 (1972). Accordingly, the doctrine of superior knowledge is not available to plaintiff under the particular facts of this case. The court holds that plaintiff's reliance upon that doctrine, to show a breach of contract by defendant, is misplaced.

VECP Claims

Plaintiff next contends that at the time it submitted its VECP, it had no knowledge of any potential errors in the contours stemming from any earlier meetings with Corps officials.[38] As the court has pointed out in its foregoing analysis, any errors in the contours are immaterial due to plaintiff's lack of reliance upon the contours. In any case, the evidence convincingly demonstrates that Hardwick and the Corps entered into the VECP in good faith. In short, plaintiff was not compelled by the Corps to submit the VECP, but prepared and submitted the VECP on its own. Accordingly, the VECP must stand. Just as Hardwick did not rely upon the contours, or the lack of them, in making its bid, it did not rely in any way upon the contours in connection with the VECP. There is some doubt that a VECP was actually necessary under the Contract in order for Hardwick to obtain the Corps's approval of borrow sources within 300 feet of the levee. However, notwithstanding plaintiff's testimony to the contrary, the court believes that plaintiff was not compelled, but elected to proceed in that

38. This assertion is supported by the fact that it would be highly unlikely that Hardwick, had it clearly understood the significance of the Corps's alleged revelation that the ground was actually lower than depicted on the drawings, because of contour errors, would have pursued a VECP costing it money. The more likely course under such circumstances would have been for it to immediately file a claim.

fashion.[39] On the basis of its careful review of the evidence, the court is satisfied that the VECP was a fairly negotiated and quite reasonable proposal made by plaintiff, was supported by adequate consideration paid and received by both parties. Mutuality is clearly present. Hardwick received the right to take wet borrow material within 300 feet of the levee, even though this might weaken the levee, and, using its draglines, achieved economies over scraper operations. Because of the sharing of the resultant cost savings inherent in the VECP, the Corps received consideration in a price reduction. For this consideration, the Corps accepted the increased risk of resultant levee failures for which it might have to pay substantial levee repair costs. The court can find no persuasive justification for setting aside the VECP. Accordingly, the VECP provides no basis for a recovery by plaintiff.

Boring Claims

The Plans contained a total of about 68 borings. (Apparently, one boring was erroneously shown twice.) Of these, approximately 19 showed the water table five feet or less below the surface, thus indicating a high level of moisture.

Plaintiff contends that defendant's borings were inadequate in two respects — both as to the information shown in the borings and the information omitted from the borings. Accordingly, Hardwick argues that it was misled by the borings,

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39. If, as plaintiff claims, there was improper pressure put upon it by Mr. Palmateer or other Corps officials to submit a VECP to obtain prompt Corps approval of its change to the uncompacted fill alternate, other borrow sources and the use of draglines within 300 feet of the levee, it should have at least resisted that pressure and documented its complaints before going forward.

and that it was damaged due to its reasonable reliance upon the adequacy of the borings. Plaintiff's contentions were supported by the expert testimony of Peter Lenzini, a professor of engineering and a specialist in soil mechanics and foundation engineering problems. Mr. Lenzini first strongly criticized defendant's boring data for omitting blow counts, because such data would have indicated the density of the soils at the site and how close these soils were to their liquid limits.[40] He said that if the Plans had contained blow count data with high liquid limits, bidders would have judged that the soils at the site were uniformly weak and unconsolidated, and would have bid accordingly.[41]

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40. Usually blow count data consists of tests of resistance to penetration using a standard penetration test, a drive sampling is employed using a drive table and a so-called "split spoon sampler" technique with a penetration rod and the proper weights.

41. The liquid limit of a soil is the water content at which a remolded soil changes from a liquid or slurry state to a plastic or semi-solid state. The plastic limit of a soil is the water content at which a remolded soil passes from being plastic or semi-solid to a solid state. Thus, every fine grained soil, such as those present at the job site, has different limits. The liquid limit and plastic limit, taken together, are known as the Atterberg limits and are used to classify various types of clays and silty soils as being either ML, MH, CL or CH. The plasticity index is the numerical difference (using the scale of water content which is expressed as a percentage of dry weight) in the liquid and plastic limits. This index is derived simply by subtracting the plastic number from the liquid number. As a general matter, a plastic soil can be kneaded without breaking apart. If the material is allowed to dry further, it will crumble. Thus, CH clays have a high plasticity, are very difficult to dry, have low strength and high compressibility; CL clays have a low plasticity, higher strength and lower compressibility; ML silts have low compressibility; and MH silts have high compressibility (none were

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Appendix B

Mr. Lenzini said the Plans lacked soil consistency data which would allow a contractor to more accurately determine whether soils are "stiff" or "soft." Thus, if the contractor has available the "natural water content" of the soil samples (derived from the borings), he would be better able to determine soil consistency using the plastic and liquid limits. Thus, Mr. Lenzini said that omission of the natural water content (along with the plastic and liquid limits) was material error.

Further, Mr. Lenzini, testified that based upon the downward pressure in pounds-per-square-inch exerted by the various types of equipment which the contractor planned to use, only a few borings would have alerted the contractor to a need for wide track or floatation dozers and these particular borings were located at the Main Stem structure area and in the trails. Therefore, he concluded that based upon a majority of samples, and the known downward pressures exerted by draglines and dozers, a contractor, based upon the limited data given, would have anticipated no difficulty in spreading and manipulating the fill material after casting and that stability mats would not be needed (except in a relatively few areas).

Mr. Lenzini also attacked the adequacy of the Plan borings because they showed water tables after 15 minutes when, in his judgment, they should have also been shown at other times, particularly after 24 hours. He reasoned that the speed with

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(Cont'd)
present at this job site). The plasticity index is the best way to judge the strengths of these types of clay soils. Another index, the liquidity index, is derived by dividing the natural water content by the plasticity index. For example, if the natural water content is equal to the liquid limit, the liquidity index is equal to one (because the liquid limit minus the plastic limit divided by the plasticity index is one).

which water flows into a boring depends upon the permeability of the surrounding soil and the volume of the boring. Thus, if the soil is a fine-grained sand, the water will flow in relatively quickly; but if the soil is a fine-grained clay, it might never flow in depending upon the degree of evaporation as it seeps into the boring. Further, he said that no appreciable water can flow into borings in fine-grained clays within only 15 minutes, except when the borings penetrate into sand layers or lenses beneath the clays in which event (as he admitted during cross examination) 15 minutes might be sufficient to accurately reflect water levels. Mr. Lenzini said that there are three distinct periods when water levels should be recorded — when the drilling first encounters water, at the end of the drilling, and 24 hours after completion of the drilling.

Mr. Lenzini testified that other boring data which should have been shown in the Plans (some identified in Corps manuals), consisted of the following: (1) changes in materials; (2) water table surfaces; (3) water content and soil phases; (4) character of any rock phases; (5) depth of any cavities; (6) nature of any cavity fillings; (7) core losses or percent of sample recovery; (8) types and sizes of borings; (9) dates of borings; (10) the true actual elevations of the tops of the borings; and (11) the thickness of the topsoil. Mr. Lenzini also said that, in his expert opinion, based only upon the soil data shown in the Plans, a majority of the job site would have appeared to a reasonably prudent levee contractor as either average or above average for use of scrapers.[42] He stated that in the upper channel of Palmer Creek a prudent contractor would have concluded that only 84 percent of the soils would be good material, and in

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42. Mr. Lenzini admitted that the designated borrow areas were shown as having average or above average conditions only in the first foot of material.

the lower channel only 50 percent would be good material. Finally, he testified that based upon the Plans, such a contractor could not have anticipated the need for low ground pressure dozers in any locations and, based upon water tables shown in the borings, in only eight to 10 locations could such a contractor have reasonably anticipated the need for stability mats for dragline operations.

Defendant contends that the boring data was not deficient and that none of Mr. Lenzini's criticisms of the borings have merit. Defendant offered the testimony of its expert, Mr. de Monte, to rebut the expert testimony of Mr. Lenzini and plaintiff's contentions regarding the inadequacy of the borings. Mr. de Monte maintained that a reasonably prudent contractor would have recognized, solely from the boring data provided in the Plans, that the soils at the site were very wet and soft in many areas, particularly those west of the lake. Further, he said that this conclusion is basically all that could have been derived from the omitted blow count data. Therefore, no blow count data were needed to tell Hardwick something that was so obvious, particularly when high water levels were shown in a number of borings. Mr. de Monte argued that, normally, when the Corps performs standard penetration tests, blow count data is included with the boring data, but the Corps does not include such data when the blow count tests are non-standard, as was the case here. Further, he testified that, in his view, blow count data is not really necessary for clay soils, which were present at this site. Additionally, he stated that the Plans were not defective for omitting the Atterberg limits in some of the borings because there were enough borings to adequately warn of soil plasticity. He said the only way to accurately and realistically determine soil strengths is to perform proper soil tests.

Appendix B

Mr. de Monte contested Mr. Lenzini's testimony regarding the need for the taking of three separate water levels in the borings. He opined that the borings were not deficient for not showing water levels at 24 hours in addition to showing them after only 15 minutes. He said that when the borings penetrated into sand lenses beneath the clay strata, as they clearly did in some cases, the water levels would have been about the same after 24 hours. Thus, as to these borings, it would have made no significant difference when they were taken. Further, Mr. de Monte testified that his soil borings taken for purposes of his testimony at trial confirmed that there was little or no difference in water levels whether taken after 15 minutes or 24 hours.

Also, Mr. de Monte testified that some boring data omitted from the plans was insignificant. For example, soil boring data taken in existing embankments would not be relevant and its omission would not have effected the bids. Further, he stated that an experienced contractor would know that water tables would vary directly with lake, Palmer Creek and Missouri River levels (which, in turn, would depend upon rainfall, evaporation, up-river releases and similar factors). Therefore, he asserted that it was unreasonable for Hardwick to assume that the water levels shown in the borings were static and that defendant's borings intended to represent nonfluctuation of water levels. Mr. de Monte maintained that if a boring were taken in a dry period, an experienced contractor would assume that during the wet season, the groundwater level might well be higher than the levels shown in the borings. Further, he said some areas at the job site would not have been effected by high groundwater, particularly those in the upper Palmer Creek channel portion of the job. Also, it would be axiomatic to an experienced contractor that water tables, if close to the surface

at a job site, will reduce job efficiency and impede effective utilization of equipment. Moreover, he testified persuasively that an experienced contractor would not need definitive boring data to judge the suitability of soils for scraper operations if the borings, as they did in various areas here, indicate at least a five-foot-thick blanket of clay soil in the foundation. Further, Mr. de Monte said that soil consistency data, although pertinent to levee construction, is more important to construction utilizing rubber-tired scrapers than to the use of draglines, and not necessarily relevant at all to construction of concrete structures. Thus, Mr. de Monte testified that the Plans, including the borings, suggested the presence of excess hydrostatic pressure (negative capillary pressure which can be manifested by artesian wells) at some locations, thereby giving warning of possible water problems. Accordingly, he said plaintiff should have anticipated difficulty in manipulation of the fill and the need for floatation equipment and stability mats in the areas where they were later required. In sum, defendant contends that, as shown by the expert testimony of Mr. de Monte, the boring data was sufficient to warn an experienced contractor of high water levels and soft, subsurface soils, regardless of the described omissions, and that all of plaintiff's contentions regarding the inadequacies of the borings are without merit.

Admittedly, the boring data would have been more complete had the data contained soil consistency information, with both natural water content and liquid and plastic limit information. Some testimony indicated that, had Hardwick been provided with all of the Corps's boring data, it might have anticipated the need for mats in approximately eight additional areas, due to the presence of soft clays near the surface. Thus, a more accurate assessment of potential operational problems stemming from poor soil conditions would have been possible.

But, this is a matter of degree and the fundamental question remains as to the criticalness of these omitted data, particularly to an experienced and prudent contractor. Was the boring data sufficient for an experienced contractor to anticipate foundation weakness from the presence of soft, wet clays and poor support for equipment in handling wet gumbo materials in the levee, particularly since the uncompacted fill alternate was an authorized option? The court's answer to this question is yes.

A careful review of all relevant evidence shows that defendant's borings were well distributed throughout the levee area and, generally, were representative of the conditions at the time the borings were taken. They were sufficient in number, diameter, depth and location. They were also dated. Therefore, the borings did not speak to any other times. In short, the borings represented conditions only on the dates they were taken (most dated from about 1963). Clearly, the Corps intended no representation that the borings would reflect actual conditions during the entire period of construction (which was extended by weather delays). To the extent that Hardwick assumed the contrary, it was imprudent.

Further, the court cannot endorse plaintiff's argument with respect to the need for the inclusion of blow counts. Mr. de Monte's testimony showed, convincingly in the court's view, that the addition of blow counts would have been merely confirmatory of what was already quite apparent — the presence of weak, unconsolidated soils with poor support characteristics. The court further finds that the borings were not deficient for only showing water levels after 15 minutes and failing to additionally show water levels after 24 hours. The borings, which indicated water levels after 15 minutes, carried with them no representations by defendant that those levels would remain

constant throughout the period of plaintiff's performance of the Contract. Some of the borings reached into the sand lenses beneath the layers of surface clays. Thus, the water levels in those particular borings would have reached their maximum height in only 15 minutes in any case. Therefore, it would have been fruitless and wasteful for defendant to have taken another water level reading after 24 hours in these borings.[43] Moreover, Mr. de Monte's boring studies, performed for trial purposes, indicated that water levels did not vary significantly between these two time periods.

While the exact elevations of the tops of some of the borings may have been incorrectly represented on the Plans, and the actual locations may have been, in some few instances, in error, these errors were minor. Plaintiff has failed to prove to the court's satisfaction that these minor errors, if present, materially misled it in preparing its bid. Further, plaintiff has failed to show that the various soils depicted in the borings are in error in any material way, either with respect to their types, thicknesses, depths or respective locations.

Plaintiff's only borings were those it took using a hand-held dynamite auger having very limited penetration capabilities. Hardwick visually and manually examined the soil samples derived from these borings, but conducted no lab or other definitive soils strength tests on these samples. Additionally,

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43. Mr. Lenzini's three-period sampling standard for taking water levels in borings is facially unreasonable in the court's view, particularly for a levee project in a low risk floodplain area. Mr. Lenzini's three-step procedure, which would have required returning to each boring for the 24-hour sampling to be done, was an added expense that, in this case, would have merely confirmed the existence of high ground-water levels, within five feet of ground surface as shown in 19 areas.

Hardwick used a stick to probe various unidentified areas during its site visits to determine the soil strengths.

When soil boring data are so obviously not current, as was the case here, it is advisable that the data be verified and a reasonable correlation or comparison made of the old data with current data derived from a sufficient number of additional borings. Further, while it is expected that a hydrologist would know and understand the actions of groundwater and be able to definitively interpret boring data, a civil engineer may not have that professional capability. If a contractor had data presented in the plans and specifications which was obviously limited and non-current and, further, if he did not have the professional competence to properly interpret that data, prudence would require that he either hire a qualified consultant hydrologist or refrain from bidding. The Corps took only a few borings immediately prior to letting the job. Thus, it did not attempt to confirm the accuracy of its old boring data. Basically, it left up to the bidders whether they should verify the accuracy of the boring data. In this regard the Contract contained a notice that the contractor was responsible for verification of site conditions.

Clearly, Hardwick could have taken its own borings. If Hardwick truly felt that the borings were deficient in not showing blow counts, or a sufficient number of water levels, or water levels after an insufficient time lapse, it could have acquired or rented a swamp buggy with a power drill and removed whatever doubts it may have had about the adequacy of the Corps's borings. Under these circumstances, the court finds that the Corps's borings, although obviously subject to some criticisms with respect to completeness, on balance gave sufficient notice to reasonably prudent bidders of poor subsurface conditions, including the possibility of high water

tables and soft soils, notwithstanding the above-described omissions. Accordingly, the court finds that the borings were generally adequate for this floodplain levee project to warn Hardwick of the operational problems it encountered and, therefore, they do not give rise to any basis for plaintiff's claims.

Plaintiff's Over-Inspection and Constructive Changes Claims

Plaintiff claims that defendant misinterpreted section 2D, paragraph 7f of the Contract with regard to the lift thickness limitation.

Plaintiff charges that defendant, at least throughout most of plaintiff's performance of the Contract, required that the dragline lifts, when cast on the levee, not exceed two feet before any bulldozer manipulation. Plaintiff contends that under a proper interpretation of this limitation, it was not required to achieve a lift thickness of two feet until after manipulation. The loads of material, when cast by the 200W dragline, often consisted of very wet, heavy clays which were deposited in large individual mounds of soil (which plaintiff during trial often referred to as "chocolate drops") exceeding two and sometimes four feet in height. Thus, defendant's interpretation would have meant that the manipulation of a cast no more than two feet in thickness would have resulted in reducing the lift thickness to substantially less than two feet. Since most buckets of material from the 200W dragline, when first deposited, usually exceeded three and sometimes four feet in height, the Corps's insistence upon strict adherence to its interpretation of this provision would have precluded Hardwick from effectively using the 200W dragline. However, the Corps did not object to use of the 200W dragline on the Project.

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During the initial period of Hardwick's performance, when Mr. Elmore was the Contracting Officer's representative at the site, there is no record of any real dispute about the lift thickness limitation. This fact suggests that the Corps simply accepted Hardwick's interpretation of the lift thickness requirement and, to the extent that draglines were in use at this stage of construction, allowed lifts to exceed two feet when cast. Also, the court is satisfied, notwithstanding Hardwick's disagreement, that Corps officials eventually accepted Hardwick's interpretation. It is obvious from the conflicting testimony of the Corps's own witnesses about this provision that there was some confusion, even disagreement, within the Corps with respect to the proper interpretation of this provision. In fact, Mr. Whaley testified that be interpreted the limit as being applicable after manipulation.

It is well established that contract interpretation begins with the plain language of the agreement. *Gould, Inc. v. United States*, 935 F.2d 1271, 1274 (Fed. Cir. 1991). Indeed, to read the language of the specification as urged by defendant would tend to interject ambiguity where none exists. Further, the language in the Contract is the Corps's language. Had the Corps intended to impose the two-foot limit before rather than after manipulation, all it had to do was clearly say so in the above-numbered specification. It simply did not do so. Should the provision be regarded as not plain in meaning, the court would hold that the ambiguity is latent and, accordingly, the court would, by applying the doctrine of *contra proferentum*, adopt plaintiff's interpretation since defendant drafted the provision and plaintiff's interpretation is reasonable. *Southland Enters. v. United States*, 24 Cl. Ct. 596, 606 (1991) (citing *United States v. Turner Constr. Co.*, 819 F.2d 283, 286 (Fed. Cir. 1987)). Consequently, the court finds that plaintiff is entitled to recover

damages for defendant's breach in misinterpreting the lift thickness requirement for a period of months commencing with Mr. Palmateer's tenure as the Contracting Officer's representative at the site.

The court notes, finally, that the plain meaning of the specification is in conformity with the interpretation that the parties finally agreed upon and is not inconsistent with other pertinent provisions of the Contract.

The next question presented is whether the Corps over-inspected by requiring extra manipulation of the lifts after placement in order to obtain a greater level of compaction not required under the uncompacted fill alternate. When this alternate is used, the Plans established no procedure for taking soil samples from the levee after manipulation of each reach because no moisture requirement is applicable. In practice, Corps inspectors merely looked at the lifts, without actual measurement, and guessed whether they exceeded two feet. When they insisted upon added manipulation, when not needed to eliminate individual loads or to remove large open voids, Corps inspectors, in effect, were imposing a moisture specification not required by the Plans and were requiring extra manipulation not required by the Contract.[44]

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44. Defendant would have the court apply "simple math" to explain why plaintiff was motivated to apply a less restrictive interpretation of the lift thickness requirement. It argues that plaintiff's interpretation meant fewer lifts would be needed to reach the required height of the levee. However, similar logic explains why the Corps, during periods of Hardwick's performance, pressed Hardwick to reduce the lifts to less than two feet — it meant much more manipulation, more drying out and a much more compacted levee. Applying the court's simple math shows

(Cont'd)

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Plaintiff charges that Corps inspectors required manipulation immediately after casting. Obviously, there was no specification requirement that the manipulation had to be done immediately after the loads were cast. So long as plaintiff's manipulation succeeded in eliminating individual loads and large open voids, the uncompacted fill alternate gave the Corps no control over moisture content or the time of manipulation (unless, of course, the delay in manipulation resulted in drying out such that bonding of the next lift would not be possible). However, most of the evidence relating to defendant's numerous operational complaints, as revealed in defendant's records, were generally not about plaintiff's failure to remove individual loads and large open voids but about placement of material that appeared too wet.

If there were six-inch ruts in the levee and material was placed thereon without first eliminating the ruts, it is possible that voids of sufficient size to violate the specification requirement for manipulation could be created. Logically, then, manipulation would be necessary. However, there is no evidence that this condition was actually a problem during construction. Further, there is no indication in this record that Hardwick's dragline placement of large loads, up to four feet high, resulted in the creation of voids. The Corps's inspectors' recorded criticisms in their daily logs do not reflect complaints of large open voids remaining in the levee after manipulation. Although the logs do show that Corps inspectors sometimes complained about the need for additional passes with the dozers,

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that when the Corps required extra manipulation by limiting the casts to two feet, it effectively reduced each completed lift (after manipulation) to about one and one-half feet. In that case it would have required at least six lifts to achieve a nine-foot levee height.

mostly they indicate a concern for achieving a high degree of compaction, presumably to minimize the risk of slides from use of the uncompacted fill option. The Corps's inspectors' objections suggest that if they regarded the material as "too wet," the lift thickness really didn't matter. Moreover, Corps inspectors never identified exactly what they regarded as a "large open void," nor do any of their comments show that Hardwick failed to remove such voids when they occurred. In any event, for purposes of this job, Messrs. Palmateer and Whaley both arrived at the same interpretation — that advanced by Hardwick — that the two-foot requirement applied after manipulation.

Accordingly, the court finds that during the time that Mr. Palmateer was in charge at the site, defendant misinterpreted the Plans by unreasonably imposing an *ex contractu* requirement respecting the lift thickness, thereby adding to plaintiff's operational costs. Therefore, this particular claim is valid and a proper basis to support an award of damages in this case.

Plaintiff claims that over-inspection also resulted when Corps inspectors required that Hardwick stockpile material because it appeared to inspectors to be too wet for casting onto the levee. Thus, plaintiff charges that it was required to allow the material to dry even though the material could have been cast with one move directly onto the levee. Plaintiff contends that this needless stockpiling was the imposition of an additional *ex contractu* requirement which added to its costs.

The evidence shows, however, that most of Hardwick's stockpiling, particularly that west of the lake (approximately 80 percent), was a part of plaintiff's VECP proposal. Thus, all of that stockpiling, after approval of the VECP, was in no sense

compelled by defendant because agreed upon by Hardwick. Further, other stockpiling occurred during plaintiff's nighttime operations, when there was insufficient lighting to cast immediately onto the levee, during work on the structures (also agreed upon because this stockpiling was a specification requirement), and when lakeside borrow material was simply too far distant from the levee to allow placement with only one cast. In short, double, or on occasion even triple, handling was anticipated in the VECP, or it was required by operational necessity. Finally, it is instructive that plaintiff failed to create any formal contemporaneous record of its complaints regarding the instances when unnecessary stockpiling actually occurred. Plaintiff did not file any written objection with the Corps or otherwise document its over-inspection claim, or reserve any rights under the Contract in regard to this claim. From the evidence presented, it is impossible for this court to separate the stockpiling due to the claimed over-inspection, and that attributable to either the VECP or operational requirements. Accordingly, the court concludes that plaintiff has not shown by a preponderance of the evidence that otherwise unneeded handling occurred sufficient to support a damage claim in this case.

Further, plaintiff alleges that Corps inspectors required it to manipulate the fill using bulldozers while it could have used the buckets of its draglines. This contention is also without merit. During construction plaintiff never complained about not being allowed to use the buckets of the draglines to manipulate the casts. There is no indication that the Corps, if requested, would not have allowed plaintiff to use dragline buckets to smooth the fill. It is apparent from a reasonable interpretation of the specifications that plaintiff, in its discretion, could have chosen any method it desired to

manipulate the fill, including use of the buckets of its draglines. In any event, defendant was not given any opportunity to agree or disagree about use of this method. Thus, the court finds that no compensable over-inspection claim in this regard has been satisfactorily proven by plaintiff.

Plaintiff contends that its over-inspection claims are supported by the high compaction rate achieved in constructing the levee. Mr. Lenzini testified that the Corps's density tests, performed prior to trial, showed that Hardwick had achieved an average compaction of 93 1/2 percent, or compaction equivalent to that obtained in the compacted fill method in highways and dams, usually averaging between 90 percent and 95 percent. Plaintiff argues that even if the Corps's compaction tests are omitted from calculations of average density, the average density obtained in the levee, generally, was comparable to the 90 percent level — the high compaction level ordinarily achieved in using the compacted fill method of construction. It maintains that such a compaction result is evidence that Corps inspectors, by their interpretation of the specifications, imposed extra work upon Hardwick in some areas. However, plaintiff's compaction tests were flawed because they included areas around the structures with respect to which the specifications required compaction.

Clearly many factors contribute to the particular compaction rate achieved, including the types of soils involved, their moisture content when placed, the weight of the equipment, the sizes of the loads being placed, the sizes of the scraper tires and the treads of the dozers, the extent of the overbuild, climate conditions during placement and the extent of the manipulation performed. Thus, plaintiff's evidence has failed to convince the court that the Corp's over-inspection was the cause of the unusually high compaction level here achieved.

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Plaintiff has also alleged that defendant over-inspected by imposing extra dewatering requirements upon plaintiff. Hardwick admits that it incurred excessive dewatering costs, in part, because of its own mistakes, particularly during construction of the Main Stem structure. However, Hardwick also blames other unanticipated factors including inflation, increases in fuel, trucking costs, the price per yard for materials, increased interest costs, loss of its structures foreman, delay due to the Corps's requirement that some metal be replaced and delay due to the late delivery of some ready-mix (because of a supplier's mistake in supplying unwashed aggregate). Defendant contends that the Corps was not responsible for any of these causes and, therefore, that they cannot be the basis for a monetary claim against it.

The facts again disprove the validity of Hardwick's claim of over-inspection in connection with dewatering of the structures. It is undisputed that a spongy area at one corner of the excavation for the 400 structure could not be adequately drained with Hardwick's sump pump system. Therefore, Corps inspectors properly refused to allow Hardwick to pour concrete on top of the spongy area. Following the recommendation of its dewatering contractor, plaintiff wisely chose to adopt a greater capacity, but more costly, deep well system. It did so to avoid further delay and the possible postponement, because of winter weather, of the concrete pour until the next construction season. The alternate system which was then installed succeeded in completing the dewatering needed to meet specification levels. In short, the facts show that the Corps did not impose use of the deep well system upon plaintiff as a dewatering requirement. The court finds, therefore, since none of the resultant added costs for the deep well system at the 400 structure may be attributable to defendant, plaintiff's monetary

damage claim arising from an alleged over-inspection during dewatering of the 400 structure must fail.

Plaintiff first attempted to use a three-well dewatering system for the Main Stem structure, even though the dewatering contractor had recommended a four- or five-well system. However, Hardwick's three-well system simply did not achieve the necessary specification level of dewatering. Thus, the four- or five-well system (as Hill proposed) was needed. Plaintiff's Wetness Report, page 34, claimed a lengthy drawdown time for Cut-Off lake (approximately 27 days to achieve a reduction of one and one-half feet). This lengthy drawdown time actually supports defendant's contention that the fourth well was needed. The court finds that plaintiff independently contracted for the additional or fourth well, as recommended by its dewatering contractor, because it recognized that a fourth well would assure dewatering to the required level, and not because of any Corps requirement. After installation of the fourth well, the system satisfactorily completed the job. Hardwick installed the fourth well without filing any formal complaint. If Hardwick regarded the fourth well installation as an *ex contractu* demand, rather than merely a suggestion as defendant contends, plaintiff should have vigorously contested this requirement at that time by filing a formal claim, or by reserving its right to later contest the issue by an appropriate written notification. That it did neither diminishes the persuasiveness of its arguments on this point. Therefore, in view of the dewatering contractor's recommendation and defendant's testimony regarding the circumstances surrounding the installation of the fourth well, the court finds that defendant did not demand or require that plaintiff's dewatering contractor install the fourth well. Accordingly, the court further finds that plaintiff has failed to meet its burden of showing by a preponderance of the evidence

that defendant required or was responsible for plaintiff's installation of an otherwise unnecessary fourth deep well pump for dewatering the Main Stem structure.

In sum, the court is convinced that the dewatering systems actually installed at both the 400 and the Main Stem structures were recommended by the dewatering contractor involved, were used to successfully dewater the two structures after installation and were needed from the beginning. Consequently, the court further finds that, with respect to both the 400 structure and the Main Stem structure, plaintiff's over-inspection claims have no merit. Thus, no damages for extra dewatering costs are recoverable by plaintiff.

Finally, plaintiff claims that the Corps over-inspected by insisting that Hardwick keep the lake at arbitrarily high levels during construction. As previously noted, the Plans reflected one lake level, approximately 620 MSL, on three specific dates. Plaintiff maintains that it considered this a representation that the lake would not exceed that specific level. However, defendant alleges that no experienced contractor would regard a showing of these three days' levels at the same level as an affirmative representation that the level of the lake was static, or would not vary with precipitation and river flows. Residents in the area, including Mr. Manson, knew about the variation in lake levels, which is usually caused by local rains and the intermittent flooding of Palmer Creek. In fact, Mr. Manson also knew of the use of the center board in the weir to control the height of the lake during duck season. Moreover, it is apparent from the Plans that Palmer Creek provides the only drainage from the north, and all of its flow is, of course, into the lake. Hardwick, as an experienced contractor, knew or should have known that lake levels would fluctuate significantly during

construction. Thus, as the court previously stated, plaintiff's assumption of static lake levels was unreasonable.

The evidence suggests that the Corps did not know that the top of the weir was at 618.5 MSL until after construction had begun. Plaintiff did not know this either until much later, when Hardwick had Mr. Bradfield complete a survey to accurately determine the weir's height. As defendant's brief points out, the level of the lake was not a major factor in plaintiff's bid because, regardless, plaintiff planned to lower the lake to approximately 618.5 MSL in connection with its plan to build a diversion ditch to drain water away from the 400 structure during its construction.

Defendant did not propose that plaintiff raise the lake level to any particular height when plaintiff sought Corps approval of its 400 structure plan and diversion channel. Basically, it was plaintiff's proposal and that proposal acknowledged and accepted that other federal and state agencies had legitimate concerns and appropriate regulatory authority with respect to the lake levels and the construction of the diversion ditch which would effectively lower the lake. Plaintiff's proposal to lower the lake, and to again raise it during the hunting season, was a reasonable response to those concerns and did not constitute an *ex contractu* imposition by the Corps of a minimum lake level.

From the foregoing analysis it is clear that plaintiff has failed to carry its burden of proof as to its claim of over-inspection with respect to the Corps's imposition of unreasonably high lake levels. Therefore, the court finds that plaintiff's claim of extra costs due to artificially imposed, high lake levels has no merit. Accordingly, this claim will not be considered as a proper element of damage in this case.

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Differing Site Condition Claims

Plaintiff's differing site condition claims, in substance, are that Hardwick was not sufficiently warned, or was materially misled, by positive representations in the Plans of potential job-site wetness. Therefore, plaintiff argues that it is entitled to recover damages under the Differing Site Conditions clause of the Contract, General Provision (GP) 4(a). Defendant strenuously opposes any entitlement to recovery based upon this clause. That clause reads, in part, as follows:

> The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made.

The purpose of the clause is to provide the government with more accurate bids by discouraging inflation for risks that may not occur. The clause eases the contractor's burden of risk assessment and site investigation. *Foster Constr. C. A. &*

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Williams Bros. Co. v. United States, 193 Ct. Cl. 587, 613-14, 435 F.2d 873, 887 (1970). Basically, differing site conditions can arise in two circumstances — conditions differing from the contract indications and those differing from conditions normally encountered. These are usually referred to as Type I and Type II differing site conditions.

To support its Type I differing site conditions claim, plaintiff's principle allegations are that both the pre-bid and Contract data provided were inaccurate or insufficient as follows: soils at the site had materially worse bearing capacity than indicated by the soil classes shown on the government's borings and, therefore, had unusual instability and workability problems when wet; the groundwater levels encountered during construction were substantially higher than indicated and were even artesian; the numbers and sizes of swampy areas shown were deficient; the contract documents failed to warn that the one lake level shown, 619.5 MSL, and Missouri River levels could fluctuate significantly from the indicated levels; the contours shown were materially in error, thereby resulting in the ground in certain critical areas being lower than depicted which, in turn, misled plaintiff as to potential inundation and drainage problems at the site; and the contract documents failed to contain sufficient indications that the job would require abnormal means of construction, such as flotation dozers and other equipment, thereby implying that operators with only the usual skills and standard earth moving equipment could construct the levee. Defendant contends that these allegations are not supported by the facts and, accordingly, that none have merit.

To prevail on a Type I differing site condition claim, a contractor must first prove by a preponderance of the evidence

that "the conditions 'indicated' in the contract differ materially from those it encounters during performance." *Stuyvesant Dredging Co. v. United States*, 834 F.2d 1576, 1581 (Fed. Cir. 1987); *P.J. Maffei Bldg. Wrecking Corp. v. United States*, 732 F.2d 913, 916 (Fed. Cir. 1984); *see also Arundel Corp. v. United States*, 207 Ct. Cl. 84, 105, 515 F.2d 1116, 1128 (1975). The meaning of the term "indicated" is a legal determination to be made in the court's discretion from the vantage point of what a reasonably prudent, knowledgeable and experienced contractor would have expected when bidding the contract. *P.J. Maffei*, 732 F.2d at 916-17. A material discrepancy between what is indicated in the contract documents and what is encountered at the site can result in unanticipated costs for which the government would be liable. However, conditions which are discoverable by a reasonable site visit and diligent review of the contract documents would be chargeable to the contractor. *Dayton Constr. Co.*, 88-2 BCA ¶ 16, 809 (HUDBCA 1988); *see also* Cibinic & Nash, *Administration of Government Contracts* (1986) at 379. In other words, to be a Type I condition, the condition must be "reasonably unforeseeable on the basis of all the information available to the contractor at the time of bidding." *Mojave Enter. v. United States*, 3 Cl. Ct. 353, 356-57 (1983).

Defendant correctly points out that the contract documents contained no affirmative representations that the groundwater, river and lake levels were static or would not change from the levels shown in the Plans. In fact, the drawings provided specific dates for the levels shown. For example, Drawing A-1 states that aerial photos used to prepare the ground and lake elevations shown were taken in 1963. Drawings A-3 through A-9 showed the dates that the various borings were taken; Drawings A-4, A-7, A-8, A-9 and B-6 indicated lake levels at elevation 619.5

for specific dates. Thus, all of these Drawings speak only as to the specific dates given for these data and do not represent an express or implied representation or guarantee that these water levels would stay the same throughout the period of the performance of the Contract. *Roen Salvage Co.*, 79-2 B.C.A. ¶ 13,882 (ENG BCA 1979); *James L. Ferry & Son, Inc.*, 81-2 B.C.A. ¶ 15,330 (ENG BCA 1981). To the contrary, based upon the known general location of the project (in a Missouri River floodplain with direct involvement of both Palmer Creek and the lake), it is abundantly clear that no guarantee was intended by the Corps respecting specific water levels.

Plaintiff also contends that ground elevations, as shown by the contours on the Drawings, constituted an affirmative representation as to such elevations. However, the Plans revealed that the contours were developed from the 1963 aerial photos using inexact photogrammetric mapping techniques allowing for variances plus or minus a foot in vertical dimensions under recognized NMAS standards (not represented on the drawings as being applicable). Further, in Section 2D, paragraph 2, the Contract specifically cautioned that existing ground elevations depicted on the Drawings were "approximate only." However, it should be noted that the Plans contained no affirmative representations as to the soil characteristics — bearing capacities, shear strength, etc. Further, the Plans contained no affirmative representations with respect to the locations of any of the old channels of the river. Consequently, this omission cannot support a Type I differing site condition.[45] In these circumstances, the court is convinced that none of plaintiff's allegations meet the first element of a Type I differing site condition.

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45. This omission will be discussed in greater detail in connection with plaintiff's claims regarding a Type II differing site condition.

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To satisfy the second element of a Type I differing site condition claim the plaintiff must show that it interpreted the contract documents as would a reasonably prudent contractor. The Contract documents showed that the work was to be performed in a floodplain adjacent to three different bodies of water, and with relatively high water levels in the soil borings, no affirmative representations regarding those borings, significant caveats regarding weather and site conditions, highly fluctuating river hydrographs, partially obliterated contours and a specific warning that the contour elevations were "approximate only." Thus, many factors suggested that non-static water level conditions were to be expected. In this case, a reasonably prudent, experienced contractor simply would not have interpreted the Plans as plaintiff maintains that it did. Consequently, the court finds that plaintiff has failed to establish an essential element of a Type I differing site condition.

Even if the evidence supported Hardwick's contention that the wetness of the job constituted a Type I condition, plaintiff would still be required to show that it reasonably relied upon its interpretation of the contract documents in preparing its bid. *Lear Siegler Management Servs. v. United States*, 867 F.2d 600, 603 (Fed. Cir. 1989) In this regard, a contractor cannot ignore any data that is supplied even though a differing site condition clause is included in the contract. *Pacific Marine Constructors - Kodiac*, 68-1 B.C.A. ¶ 6,979 (ENG BCA 1968). The contract documents contained several important disclaimers. Special Provision 5, for example, specifically stated that the information and data provided were "for information only" and that the government would not be responsible for any interpretation or conclusion drawn therefrom by the contractor. Subsection (5) specifically disclosed that the information provided between

drill holes was inferred and that localized variations were anticipated. If such variations were encountered, this provision warned that such variations would not be a differing site condition. Subsection (c) also warned that the bidder should satisfy himself as to "hazards likely to arise from weather conditions." Subsection (e) informed bidders that Missouri River stages would fluctuate due to releases from upriver reservoirs and that operations should be scheduled to take advantage of favorable river stages. Subsection (e) also states that: "The contractor shall make his own assumptions relative to releases from upstream reservoirs and [their effect upon] the work to be done under this contract. The government will not be responsible for any damage resulting from supplemental river stages."

Further, the IFB, p. IB-7, ¶ 23, informed bidders of the availability of field survey notes for examination prior to bid. These field notes reflected variations in surface water levels in the lake and Palmer Creek on a daily basis. In fact, they showed that lake levels were regularly above 619.5 MSL, the level depicted at various dates on the contract drawings. Although plaintiff urges that it simply had insufficient time to examine these field survey notes and, accordingly, did not request review, as previously noted, it could have sought a postponement of the bid due-date to permit a reasonable time for an examination of these notes. As previously stated, such an examination would have shown groundwater and Palmer Creek level fluctuations and shown that lake levels were frequently above 619.5 MSL.

The Instructions to Bidders suggested that bidders not only visit the site, but "take such other steps as may be reasonably necessary to ascertain the nature and location of the work and

the general and local conditions which can affect the work or the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work." Although plaintiff performed a site visit, it elected to take no additional deep soil borings, nor did it question local residents with regard to conditions at the site (specifically with regard to the river slope). Clearly, plaintiff erred in that it did not tie fluctuations in the river levels to water level fluctuations at the site in disregard of the flat nature of the terrain, it made no attempt to correlate the river hydrographs to any water tables shown in the borings, it ignored the pertinent fact that the Contract involved a complex flood control levee project costing millions of dollars, it did not ask for a postponement of the scheduled bid opening to allow a reasonable time to examine the field notes, and it did not conclude that dragline operations would be needed to perform most of the work, that timber mats would be required because of wet conditions, and that scrapers would not be adequate to do all of the work using the designated borrow areas. These were serious judgmental errors which collectively resulted in plaintiff's bid being too low. In short, plaintiff failed to take a number of important steps — steps which it had an obligation to take, which would have allowed it to decide for itself "the character" (or potential wetness) of the materials involved. *Stuyvesant Dredging Co. v. United States*, 834 F.2d 1576, 1581 (Fed. Cir. 1987). This failure was compounded by the fact that plaintiff unreasonably viewed some of the information supplied in the Contract documents as much more than mere guides having limited scope and utility, as the government intended, and chose not to independently verify that information to the extent that a reasonably prudent contractor would have done in exercising due diligence. *Weeks Dredging v. United States*, 13 Cl. Ct. 193, 223-24 (1987), *aff'd*, 861 F.2d 728 (Fed. Cir. 1988) (unpublished op.).

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Hardwick erroneously assumed that the back-water effect of the Missouri River would not be significant unless the river exceeded bank-full. Hardwick apparently believed that flooding of the work area would not occur when the Missouri River was at less than flood stage at the Glasgow gauge (13.8 was the average reading between 1964 and 1976).

The river hydrographs included in the Plans revealed dramatic changes in river levels for the periods shown, suggesting to an experienced contractor that groundwater, Palmer Creek and lake levels would change in the future, particularly since the borings indicated that the river was a penetrating river due to the presence of sand lenses extending from the river well into the site which, in turn, would make for a more direct relationship between high river levels and high water tables.

Plaintiff argues that the showing of a 620 contour line running over the top of the weir misled it and, for bid purposes, caused it to erroneously conclude that the top of the weir was at 620 MSL. Defendant counters that this contour may not reasonably be interpreted as a representation that that was the actual height of a man-made structure. Since plaintiff clearly planned from the beginning to lower the lake to 618 MSL (later to 618.5 MSL), as shown by its bid papers in connection with construction of a diversion ditch around the weir, defendant maintains that plaintiff could not have relied upon the 620 contour. Defendant's argument has merit. It is supported by the fact that plaintiff actually carried out its plan, which later received limited approval, to lower the lake to the 618.5 level. Clearly, plaintiff did not rely upon the lake remaining at the 619.5 level shown in the Plans.

Further, the court is convinced that plaintiff did not perform an inundation analysis using the contour data. As the court previously noted, Hardwick did not rely upon the accuracy of the contours. Moreover, any real inundation analysis, based solely upon the Plans, would have been extremely difficult, if not physically impossible, in view of the extent of obliteration of the contours.

Plaintiff, from its examination of the Contract documents, assumed that water would quickly drain away from all low areas where ponding was likely to occur, that groundwater would not be a problem, that the lake level was static, that the Missouri River would cause no back-water effects unless over bank-full, that substantially all earthen fill could be placed with scrapers, that there were high and dry hauling routes for scrapers from the designated borrow areas and that these borrow areas could be served by scrapers. All of these basis assumptions proved to be wrong. In these respects, the court again finds that plaintiff did not act as a reasonably prudent contractor in its interpretation of and reliance upon the Contract documents. Accordingly, the court finds that plaintiff has failed to show compliance with the third element of a Type I condition.

Plaintiff relies heavily upon the holding in Kinetic Builders, Inc., 88-2 B.C.A. ¶ 20,657 (ASBCA 1988), to support its claim of a differing site condition. That case concerned the subsurface presence of a special and unusual soil called "muck" which was not indicated or discoverable by a reasonable investigation. Muck, as shown by the borings, is a totally different material from the soils involved at the Palmer Creek site. Accordingly, *Kinetic Builders, Inc.* is factually distinguishable and fails to provide support for the fifth element of a Type I differing site condition claim. Further, the Palmer Creek site soils were

adequately revealed in the Contract documents or discoverable by a proper site visit, which should have included the taking of additional deep soil borings.

It is not entirely clear, based on the pleadings, whether plaintiff is maintaining a Type II differing site condition claim with respect to the wetness of the job site. The court shall nonetheless address that issue on the assumption that Hardwick has made an alternative Type II claim. Type II claims are premised upon there being a previously unknown physical condition at the site which differs materially from those conditions ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract. *Charles T. Parker Constr. Co. v. United States*, 193 Ct. Cl. 320, 433 F.2d 771 (1970); *Wm. A. Smith Contracting Co. v. United States*, 188 Ct. Cl. 1062, 412 F.2d 1325 (1969); *Commercial Mechanical Contractors, Inc.*, 83-2 B.C.A. ¶ 16,768 (ASBCA 1983). The primary difference between a Type I and Type II claim is that the comparison is not between the physical conditions encountered and those in the contract documents, but between those encountered with those that are known and usual. It is well settled that a claimant seeking to establish a Type II claim has a heavy burden of proof because of the wide variety of materials ordinarily encountered when excavating the earth's crust. *Charles T. Parker Constr. Co.*, 193 Ct. Cl. at 333, 433 F.2d at 778; *Robert McMullan and Son, Inc.*, 86-1 BCA ¶ 13,228 (ASBCA 1986).

Four key questions are posed when a Type II claim is made. What were the recognized and usual conditions at the site? What physical conditions were actually encountered? Did they differ from the known and usual? If so, did they cause an increase in cost or time of performance? *Spruce Constr., Inc.*, 86-3 B.C.A. ¶ 19,106 (ASBCA 1986).

Since the condition must have been in existence at the time of contracting, this type of claim cannot cover a condition which came into existence after contract award, such as wet conditions due to weather. *Southern Paving Corp.*, 77-2 B.C.A. ¶ 12,813 (AGBCA 1977); *Turnkey Enterprises, Inc.*, 76-1 B.C.A. ¶ 11,674 (AGBCA 1976), *aff'd, Turnkey Enterprises, Inc. v. United States*, 220 Ct. Cl. 179, 597 F.2d 750 (1979). Accordingly, defendant argues that only plaintiff's allegations concerning the omission of the former Missouri River channel and any instability of the soils which antedated the Contract could possibly qualify as Type II conditions for claim purposes. With regard to the river channel omission, the court has already indicated that the existence of such a channel was certainly foreseeable given that a considerable amount of the construction obviously paralleled the borders of an oxbow lake in a major floodplain, and that the specifications noted the presence of a sunken ship at the site. Also, the nature of the soils (their variability) for a floodplain site was not unusual. The soils were alluvial deposits which occurred over various periods in geologic history. Their unstable nature, particularly when wet, should have been evident to a reasonably prudent levee contractor, particularly to one experienced in this particular floodplain area, as was Hardwick.

Plaintiff maintains that groundwater conditions were unusual because the levee was built in an area of "reversible flow" of the groundwater. Hardwick concedes that Palmer Creek does tend to drain water in a southerly direction from the area. However, says plaintiff, because the groundwater during construction was at the same level as the lake in the areas to the north, west and east of Cut-Off lake, the usual drainage patterns were restricted. Thus, Hardwick contends that the normal southerly groundwater flow did not reduce the water

table as might normally be the case in this type of floodplain. This argument, although supported by the testimony of plaintiff's expert witness, is unpersuasive. If such an unusual pattern of groundwater flow was present, plaintiff offered no clear evidence as to when this flow pattern existed and its effect upon the work. Further, plaintiff offered no test results to support its contention. The court concludes that plaintiff's contention is mere unsupported speculation. In any case, if some blockage of normal groundwater flow existed prior to construction, the court is not persuaded that is was sufficiently material to support a Type II differing site condition claim.

Undeniably, the soils at the Palmer Creek site, particularly during the second and third years of Hardwick's performance, contained a great amount of moisture (whether due to reversible flow of groundwater, rainfall, snowfall, flooding, back-water, the presence of a piezometric mound under the lake or combinations of one or more of such causes). However, the presence of this moisture did not result in such an unusual, unknown or materially different condition sufficient to give rise to a Type II claim. *In-Line Constr.*, 86-1 B.C.A. ¶ 18,635 (IBCA 1985). In sum, the difficulties which plaintiff faced during construction were the usual and reasonably expected problems encountered when fat clay soils in a floodplain become saturated. Plaintiff has not proved to this court's satisfaction the existence of any condition or combination of conditions that reasonably could be characterized as unknown and unusual. *Turnkey Enters., Inc. v, United States*, 220 Ct. Cl. 179, 597 F.2d 750 (1979). Therefore, the court finds that plaintiff has failed to establish the existence of a Type II differing site condition claim. Accordingly, this claim is denied.

Appendix B

Defective Specification Claims

Plaintiff claims that the Plans for the Contract were defective or incomplete and that, as a result, the Corps breached express and implied warranties of the adequacy of its Plans. If plans are proven to be defective or incomplete, the legal effect is to convert a breach of an implied warranty of plans into a constructive change theory as a basis for liability. Under this theory, the "order" element of the constructive change theory is satisfied by finding the government at fault for breaching its warranty. Thus, the first question presented under this theory is whether defendant breached its implied warranty of specifications. Answering this question requires first a determination of the type of specifications presented.

Plaintiff urges that under the "teachings" of *United States v. Spearin*, 248 U.S. 132 (1918), and other cases cited in its brief, defendant breached its warranty of the accuracy and suitability of the specifications which extends from the owner to the contractor.[46] Plaintiff alleges that misrepresentations under the warranty of accuracy include those regarding soil

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46. *Spearin* involved a government contract to relocate a sewer line which failed and resulted in flood damage. The government had provided detailed specifications, with which Spearin had compiled, setting forth the character, dimensions and location of the sewer. However, the specifications were defective. The Supreme Court held that if the contractor is bound to build according to the owner's plans and specifications, the owner impliedly warrants to the contractor that if the contractor complies with the specifications, the work will be adequate. Thus, the contractor will not be responsible for the consequences of such defects regardless of the clauses requiring the contractor to visit the site, to check the plans, and to inform itself of the requirements of the work. 248 U.S. at 135-37.

conditions. Additionally, plaintiff alleges that the warranty of suitability refers to the use of specified materials, construction methods or design features in performing the work. Plaintiff contends that the warranty is breached if the final product, even though constructed in strict accordance with the specifications, contains serious structural or functional defects requiring remedial work before utilization for its intended purpose, or if the methods or designs prescribed are so deficient that the project cannot be completed without using other more expensive methods or designs. Thus, plaintiff seeks recovery for all extra costs it alleges that it incurred in employing more expensive methods to build the Palmer Creek levee.

Specifically, plaintiff alleges that defendant's representations were erroneous with respect to the topographic information, the height of the sill, the soil boring data (showing areas within five feet of the surface and water tables), swamp and ponding areas, lake levels, the types of equipment needed to perform the work and various Plan omissions, including known and unusual back-water conditions, the slope of the river, river flows, hydrologic charts and the exact location of the old Missouri River channel.

The United States contends that plaintiff's reliance upon *Spearin* is misplaced because the doctrine established by *Spearin*, a case decided in 1918, has since been significantly eroded. Under more modern case law, defendant argues, the warranty upon which plaintiff relies has been applied only to design specifications. Thus, since the specifications here involved are performance specifications, defendant argues that the *Spearin* doctrine is not applicable to the facts of this case. In addition, defendant says, even if the court finds that *Spearin* is applicable, plaintiff has failed to prove the existence of a

defect, whether within the Contract documents or among the alleged omissions plaintiff cites. First, defendant asserts that there were no positive representations regarding any of the various factors plaintiff cites, such as water levels, back-water or rates of drainage. Consequently, none of these elements are available to support a defective or inadequate specification theory. Second, defendant urges that with regard to the omitted information cited by plaintiff, all of this information was either available to plaintiff, should have been known to it as an experienced levee contractor or could have been derived by its own investigation.

There are two distinct categories of specifications, design and performance. Design specifications set forth precise measurements, tolerances, materials, quality control and other specific information by which the contractor is to construct the project with little leeway for discretion in the manner of performance. The Federal Circuit has stated, "Design specifications explicitly state how the contract is to be performed and permit no deviations. Performance specifications, on the other hand, specify the results to be obtained, and leave it to the contractor to determine how to achieve those results." *Stuyvesant Dredging Co. v. United States*, 834 F.2d 1576, 1582 (Fed. Cir. 1987) (citations omitted). Thus, the critical issue presented is whether the specifications in question "set forth an objective or standard to be achieved" or whether they "set forth in precise detail the . . . manner in which the work was to be performed." *J. L. Simmons Co. v. United States*, 188 Ct. Cl. 684, 689, 412 F.2d 1360, 1362 (1969) (defining performance and design specifications, respectively).

As is so frequently the case, the Contract contained both performance and design specifications and some mixed

specifications. For example, there can be no doubt that the location, height and slope of the levee, types of fill, riprap, and the size, materials and location of concrete structures were more design than performance specifications. By far, however, the majority of the specifications were more in the nature of performance specifications. The specifications did not direct the various types of equipment to be used or describe the way in which the contractor was to build the Project. The specifications also left the solution of problems involving methods of dewatering, drainage and construction techniques up to the contractor. Further, it was given the option to use the uncompacted fill alternate under Section 2D, paragraph 7. In short, within its engineering judgment and expertise, Hardwick was given the discretion to choose the means and methods to construct the levee. Accordingly, the court finds that the specifications, in the main, were performance specifications. Thus, *Spearin* and the other cases relied upon by plaintiff which have adhered to the holding in that case, are not availing. *Utility Contractors, Inc. v. United States*, 8 Cl. Ct. 42 (1985).

Defendant contends that even if *Spearin* applied, plaintiff has failed to prove that the specifications were defective. With respect to those categories of alleged defects relating to job-site wetness contained in the Contract documents (for example, water levels, back-water and drainage), defendant argues that it made no positive representations as to any of these matters. Thus, it contends that in any event *Spearin* is inapplicable to these alleged defects. Defendant is correct. There were no positive representations in the Plans regarding river flows, lake levels, precipitation, drainage, ponding, groundwater or back-water effects. Glasgow gauge readings and lake levels were provided as information and not as representations that those same readings would be exactly replicated during the

entire period of construction. *Lonnie E. Smith Construction Co.*, ENG BCA, 1964 WL 257; *Roen Salvage Company*, 79-2 B.C.A. ¶ 13,882 (ENG BCA 1979). Moreover, SP-5(c) and (e) of the Contract specifically informed bidders that they were to make their own assumptions regarding the effects of upriver releases and weather conditions upon the work. The court cannot totally disregard this Contract language. Further, the drainage design in the Plans was not a representation that the drainage would be at any particular rate or that water would not remain for a period of time in ditches adjacent to the levee after heavy rains. The site was plainly flat and swampy. It would be an unreasonable interpretation of the Plan's drainage design to conclude that, if a positive representation were made, the ditches must always carry all of the water immediately or else the design must be considered defective. *Banks Constr. Co. v. United States*, 176 Ct. Cl. 1302, 1317, 364 F.2d 357, 367 (1966).

Finally, there were no positive representations in the Plans with regard to the contours. The contours were derived from 1963 photos and the inexact techniques of photogrammetry. This fact is one of the reasons why the Contract, in Section 2D, paragraph 2, specifically warned bidders that the ground elevations were "approximate only" and why there was no affirmative representation of compliance with the NMAS, which standards by their terms apply to elevations derived from aerial surveys. In any case, unlike the survey-derived elevations in *B.J. Lucarelli & Co., Inc.*, 1962 BCA ¶ 3269 (ASBCA 1962), the instant elevations are entitled to a significant tolerance level particularly when the size of the project, type of terrain and nature of construction are taken into account.

Respecting those categories of defects, plaintiff claims they are attributable to omissions from the Contract documents

(including river slope data, old river channel location, Palmer Creek flows, river flows at Palmer Creek, groundwater readings at 24 hours after boring samples were extracted, ponding areas, additional marshy areas, hydrologic charts, additional contours, rating curves, back-water effect studies and other geotechnical data relating to additional tests of soils, Atterberg limits, descriptions of soil consistency and blow counts). Defendant avers that plaintiff either knew the omitted information or, as an experienced contractor, should have known that information. Defendant points out that much of this data was never collected for inclusion in the Contract documents, the data was "synthetic" in that it did not reflect actual conditions (but only hypothesized conditions developed for design purposes), the data applied only to completed levee conditions and not to construction conditions, or the data was duplicative of what was already in the Contract documents. Finally, says defendant, much of the allegedly omitted information related to fluctuations in area water levels which plaintiff, in fact, knew or should have known as an experienced levee contractor. Such general knowledge, which plaintiff knew or had available to it, included the floodplain location of the levee (adjacent to and around the river, lake and Palmer Creek), the historical oxbow formation of the lake (indicating the existence of an old channel), the nonstatic nature of groundwater and lake levels and changes in precipitation levels. Accordingly, defendant alleges that none of these omissions support plaintiff's defective specifications claim.

Defendant's foregoing arguments have merit. Plaintiff, as an experienced contractor in levee construction, should have known that this job would or very likely could incur all of the wetness conditions that it actually experienced — flooding (as defined in the Contract), back-water, fluctuations in

groundwater, lake levels, the existence and size of the piezometric mound under the lake, river levels, Palmer Creek levels, inundation of large segments of the job site at less than bank-full conditions, wet soils, poor drainage, the existence of old river channels in the levee's alignment and high levels of precipitation. If plaintiff did not know these things, as an experienced contractor it could have discovered them simply by securing the services of a competent hydrologist. In short, what it did not know with sufficient specificity to submit, in its judgment, an adequate bid, it could have easily sought out. Under the facts in this case, it is significant that plaintiff failed to do so.

Rather than the existence of material design specification defects, plaintiff's failure to take prudent investigatory actions, in conjunction with the unreasonable assumptions it made with regard to the static nature of various described water levels at the job site, caused plaintiff's problems. If plaintiff was misled, it was not due to the alleged defects but resulted from its own unreasonable assumptions and actions. *See S.O.G. of Arkansas v. United States*, 212 Ct. Cl. 125, 546 F.2d 367 (1976). Thus, the court finds that plaintiff has failed to prove that it was misled by any defects in or omissions from the specification. *Stuyvesant Dredging Co. v. United States*, 11 Cl. Ct. 853, (1987); *see also Nelson Bros. Constr. Co.*, 77-2 B.C.A. ¶ 12,660 (AGBCA 1977), *aff'd*, 225 Ct. Cl. 703 (1980); *Ragonese v. United States*, 1281 Ct. Cl. 156, 162, 120 F. Supp. 768, 770-71 (1954).

Even if the specifications are regarded as design specifications and did contain errors, the court is satisfied, based upon all relevant evidence presented, that the Corps-furnished documents were sufficiently accurate to apprise reasonably prudent bidders of job-site conditions. Accordingly, the court

further finds that, under the facts of this case, the documents were adequate for the task. The Project involved levee construction of unusual scope and complexity. The court's own site visit confirmed this fact. Obviously, there were minor errors in the Plans; no set of plans is perfect. For example, the tops of the borings were not accurately shown and their locations may have been slightly off. But these errors were not material, nor has plaintiff shown that it relied upon them to its detriment. However, notwithstanding any such minor errors, the court concludes that, on balance, the Plans were adequate, when viewed in their entirety through the prism of a reasonably prudent and experienced contractor, because they fairly represented the types of soils and hydrologic conditions which plaintiff actually encountered in performing the Contract. *Wunderlich Contracting Co. v. United States*, 173 Ct. Cl. 180, 190-91, 351 F.2d 956, 964 (1965). Finally, as in *Servidone*, plaintiff ultimately constructed essentially the same project as the one it contracted to construct. Consequently, the court finds further that, notwithstanding the extensive and unforeseen difficulties plaintiff experienced, plaintiff has not establish by a preponderance of the evidence that the specifications were defective or otherwise unsuitable. *Servidone*, 19 Cl. Ct. at 377. The Plans were adequate for this levee project. Accordingly, the court holds that plaintiff's contentions are without merit and supply no basis for a recovery in this case.[47]

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47. The Corps performed some compaction tests around the concrete structures which should not have been included in plaintiff's computation of percentage of compaction achieved (41 of 129 tests were in this category). These test simply have no relevancy to a determination of the percentage of compaction achieved elsewhere in the levee. Further, some compaction resulted from normal scraper operations which was not a result of Corps inspections or its misinterpretation of the lift

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Appendix B

Damage to Work Claims

Plaintiff's final entitlement argument resulting from its filing of a revised claim in May 1989 is also based upon job-site wetness. In this regard, plaintiff alleges that all of the previously claimed damages are compensable under the Contract's Special Provision 15, DAMAGE TO WORK (SP-15), whether or not such damages are recoverable under other theories.[48]

Pursuant to paragraph 12 of the General Provisions of the Contract, Permits and Responsibilities (GP-12), the contractor

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thickness requirement. Moreover, 40 percent of the area was shown to be "below average," which before placement of fill in the levee would require dumping ahead of the dozers and pushing the material until two to four feet of material was in place. At that point in construction the water level would not be as much of a problem for scraper operations. This fact suggests that even if some of the Corps's borings were faulty in not showing water levels at 24 hours after completion of the borings, the significance of this was substantially lessened by the fact that the levee, as it was being built, would present less and less of a wetness problem from fluctuations in the groundwater levels. Finally, because of the scale of the borings and the need to reduce the drawings in the plan process, defendant correctly argues that the extent of the top soil could not have been accurately shown on the plans.

48. As pointed out by defendant in its post-trial brief, this claim is in direct conflict with plaintiff's prior position taken in its Wetness Report that the "long term high river level had far more effect on the ground-water levels and general job-site wetness conditions than Missouri River floods occurring during the same period." While the court does not consider this inconsistency necessarily fatal to plaintiff's claim, it lessens the force and persuasiveness of plaintiff's claim arguments respecting the applicability of the Damage To Work clause.

is responsible for all work performed until completion and acceptance of the entire Project. SP-15 is an exception to that responsibility. The provision is both narrow and limited. It provides that if, in the judgment of the Contracting Officer, any part of the "permanent" work performed by the contractor is damaged by flood or earthquake, and the damage is not due to the negligence of the contractor in its engineering or construction practices, then the contractor will make the repairs ordered, and full compensation shall be made pursuant to applicable contract prices. Thus, SP-15 is a limited contractual waiver of both the contractor's responsibility and the government's sovereign immunity under certain defined and limited circumstances.

The Plan drawings contained a designation of the flood stage on the Missouri River at the Glasgow gauge, downstream from the Project site. The Contract included a specific definition of flooding for purposes of payment for Damage to Work. For flood damage to become the responsibility of defendant under this clause, it must exceed the defined level at the Glasgow gauge — a reading of approximately 24. Plaintiff contends that generalized flooding of the site is covered by the Damage to Work clause and that it sustained such damage. Defendant counters that such a reading of the Contract would ignore the specific limitations in this clause. Defendant asserts that the clause does not encompass general flooding or flooding from less than bank-full conditions. Therefore, under its interpretation of the Damage to Work clause, such flooding does not give rise to a compensable claim.

Defendant's position is the more logical one. To sustain plaintiff's position, the court would have to effectively read out of the Contract any limits on liability due to rainfall and

high river levels. A waiver of sovereign immunity, however, must be strictly construed. *Soriano v. United States*, 352 U.S. 270 (1957). The court cannot expand the Contract's definition of flooding to cover all flooding of the job site, regardless of its cause or causes. Flood conditions, as defined in the Contract, occurred during plaintiff's performance of the work on only 44 calendar days. It is obvious, therefore, that only damages to permanent work caused by Contract-defined floods occurring on those 44 days are subject to compensation under SP-15. *Utility Contractors, Inc. v. United States*, 8 Cl. Ct. 42 (1985) (involving similar flood control project and the same Damage to Work clause). Plaintiff's proof of such damages is questionable, if not non-existent. Defendant has pointedly argued that many of the claimed damages occurred on dates in completely different months than even those in which defined flood events occurred. Exhibit 2011 lists the days when the river was at or above flood stage at the Glasgow gauge. That exhibit shows that in 1977, the river was at flood stage on September 14-17. Yet Hardwick claims it suffered flood damage in October 1977. Exhibit 2011 also shows that in 1978, the river was at flood stage for 10 days in March, seven days in April and two days in May. Yet, plaintiff claims it suffered flood damage from June through October. In 1979, the river was at flood stage for 16 days in March. Yet, plaintiff claims it suffered flood damage in April through July. Thus, plaintiff has failed to provide a clear and direct correlation between the defined flood events and plaintiff's claims for flood damage.

Defendant argues that plaintiff must also prove damages to the "permanent" work to recover under SP-15. Defendant relies upon *Cinusa Constructors, Inc.*, 85-3 B.C.A. ¶ 18,258 (ENG BCA 1985), which also involved a levee construction claim premised upon the same operational inefficiencies which

form the bases for the instant claims. In *Cinusa* the Board determined that there was no damage to the "permanent" work from defined flooding. In *National Bonding & Acci. Ins. Co.*, 83-2 B.C.A. ¶ 16,863 (ENG BCA 1983), another levee construction case, the plaintiff alleged that permanent levee fill had been washed away by floods within the meaning of SP-15. In this latter case, the Board accepted the *Cinusa* definition of damage to permanent work, but found a lack of proof on washing out of levee fill. However, according to another case cited by defendant, *Diversacon Indus., Inc.*, 76-1 B.C.A. ¶ 11,875 (ENG BCA 1976), the Board found that removal of deposited eroded material into a previously excavated channel was analogous to replacement of levee fill, which was considered to be repair of damage to permanent work.

In the case at bar, plaintiff does not allege that actual destruction of the levee, siltation in an excavated channel or significant washout of levee fill actually occurred. Plaintiff has alleged that it had to clean mud from steel bars, remove debris from the levee slopes and redress the levee after flood waters receded. However, plaintiff principally relies upon its showing of damages due to the mere wetting of the job site, including the fill and borrow areas. Defendant contends that plaintiff has not alleged facts showing that "floods" occurring during any of the 44 days actually damaged any portion of the "permanent" work. Defendant concludes that the types of damages that are alleged by plaintiff are not within SP-15's limited contractual waiver of sovereign immunity and, accordingly, plaintiff's claims under the Damage to Work clause must be denied as a matter of law. The court agrees with defendant's arguments. Neither deposition of debris on the unfinished embankment, mud clinging to reinforcing bars or siltation, none of which

plaintiff proved occurred during any of the described 44 days, constituted damage to "permanent work" as defined in the Contract. Thus, plaintiff has failed to prove by a preponderance of evidence that it suffered damages under the Damage to Work clause from these causes during "floods." Consequently, the court finds that this claim is also without merit and must be denied.[49]

Bad Faith and Spoliation Claims

With regard to plaintiff's claim that defendant has engaged in a coverup, which has involved the Corps's willful, bad faith destruction of relevant documents, Hardwick attributes the Corps's bad faith, in part, to the ill will resulting from an earlier lawsuit which the old S.W. Hardwick Co. allegedly had won against the Corps in connection with a prior contract involving similar construction work. Hardwick contends that Mr. Whaley was a surveyor on that earlier job and was prejudiced against Hardwick because of his personal involvement in that litigation. Thus, plaintiff argues that Mr. Whaley's personal feelings and

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49. It should be noted that plaintiff has claimed that the deposition of debris on the levee embankment during general flooding constituted compensable damage under this clause. In this regard, plaintiff relies upon the holding in *Dyer & Dyer, Inc.*, 80-2 B.C.A. ¶ 14,563 (ENG BCA 1980). However, in that case the claimant received an equitable adjustment under the Damage to Work clause for only those areas where the channel was excavated to the completed specifications, and where defined flooding thereafter caused siltation in those areas requiring re-dredging. However, no other areas were considered to be permanent work. In the case at bar, plaintiff has not shown deposition and siltation such as occurred in *Dyer & Dyer, Inc.* Here, plaintiff's claim is for debris deposited by the River on the unfinished slopes of the levee as opposed to siltation in completed channels. Therefore, *Dyer & Dyer, Inc.* is factually distinguishable.

animosities spilled over to Hardwick and the Project as shown by his actions as a Corps inspector at the Project. Hardwick also maintains that the Corps's ill will toward it was unjustified since the legal entities were totally different and none of the S. W. Hardwick Co. key personnel worked for Hardwick, the partnership and successor entity, on the Project.[50]

Defendant contends that there is no satisfactory record regarding the existence of this alleged past lawsuit, and, moreover, that the Corps held no animosity toward plaintiff due to any alleged prior litigation. Accordingly, defendant asks that the court completely disregard plaintiff's allegations regarding any prior lawsuit as a basis for defendant's alleged bad faith.

Hardwick also contends that defendant's ill will, resulting in defendant's bad faith, is evidenced by the physical confrontation which occurred between Mr. Whaley and one of Hardwick's operators. Although Mr. Whaley denied that ill will was a significant factor during his performance of his duties at the job site, he admitted being struck by one of Hardwick's operators during a heated argument at the site. The court believes that, without question, very hard feelings and personal animosities arose during performance, particularly after Mr. Palmateer replaced Mr. Elmore as the job site representative of the Contracting Officer. The evidence is convincing that the deteriorating relationship between the Corps and Hardwick was due less to Hardwick's fault than to a combination of factors including the arrogance of the Corps's inspectors, their

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50. In fact, the evidence shows that Grover Rogers and Johnny Suterer were the only Hardwick employees at the time of the Palmer Creek job who had ever worked for S. W. Hardwick Co.

insensitivity to Hardwick's constant problems in constructing the levee under extraordinarily difficult job conditions, the Corps's unrelenting, "nitpicking" insistence upon Hardwick's strict compliance with Contract specifications (based upon the Corps's interpretation of those specifications) and the Corps's efforts (which Hardwick viewed as overbearing) to control and direct certain aspects of the work, thereby unquestionably exacerbated Hardwick's feelings toward the Corps and negatively effected its operations. However, the Corps did not breach the Contract by its mere "nitpicking," or its insistence upon strict compliance with the terms of the Contract. The Corps had a legal right to insist upon strict compliance with Contract terms and the Plans. *Granite Constr. Co. v. United States*, 962 F.2d 998, 1006-7 (Fed. Cir. 1992), *cert. denied*, 506 U.S. 1046 (1993).

Further, Hardwick contends that, under the spoliation doctrine, it is entitled to favorable presumptions which support its claims. Plaintiff points to the numbers of relevant documents which have never been produced to it. Defendant admits that some documents, which were undoubtedly generated under applicable Corps policies and procedures in connection with Hardwick's claims and, ordinarily, should still be in its files, are missing and presumed to be lost or destroyed. Defendant has offered no explanation for its inability to produce these documents other than the possibility that claim files, in the process of being moved, were lost or misplaced or unintentionally destroyed. However, plaintiff, at trial, offered no evidence of actual destruction of any particular files by any Corps personnel or any persuasive testimony or other hard evidence that any Corps official ever ordered the destruction of any documents related to Hardwick's claims.

Appendix B

It is a well-established doctrine that a party's destruction or "spoliation" of evidence can give rise to an inference that the destroyed evidence would have been damaging to that party's case. 31A C.J.S. *Evidence* § 152 (1964). The rationale is a presumption that a party does not withhold information from a tribunal which is beneficial to its case. Consequently, courts may draw an inference where it can be shown that the destroyed evidence was critical or controlling on an issue of liability and the evidence was destroyed in bad faith. *Eaton Corp. v. Appliance Valves Corp.*, 790 F.2d 874, 878 (Fed. Cir. 1986) (an inference on an issue of liability not made by the court where destroyed documents were produced earlier in discovery and plaintiff was unable to demonstrate the probative value of the destroyed evidence). In short, courts will not draw this negative inference if the evidence was unintentionally or even negligently destroyed or the destruction can be otherwise satisfactorily explained. *Ina Aviation Corp. v. United States*, 468 F. Supp. 695, 700 (E.D.N.Y.), *aff'd*, 610 F.2d 806 (2d Cir. 1979) (trial court properly granted summary judgment dismissing a wrongful death action under the Federal Tort Claims Act where the government destroyed weather logs in accordance with an established administrative procedure).

A showing of bad faith is also an element of this doctrine. *Eaton Corp.*, 790 F.2d at 878. What constitutes bad faith depends on the circumstances. *Coates v. Johnson & Johnson*, 756 F.2d 524, 551 (7th Cir. 1985). For example, the Fifth Circuit has hold that mere negligence does not meet the requisite bad faith requirement for purposes of raising an adverse inference. *Vick v. Texas Employment Comm.*, 514 F.2d 734, 737 (5th Cir. 1975). In *Vick*, the plaintiff filed a Title VII sexual discrimination action against the Texas State Employment Commission ("TEC"). Before trial, in accordance with its

established regulations concerning inactive matters, TEC destroyed records concerning the plaintiff. The Fifth Circuit held that TEC's destruction was mere negligence and not tantamount to bad faith. Thus, it said that no adverse inference against TEC was justified. In view of the holding in *Vick*, it is clear that more than mere negligence is required to give rise to the element of bad faith. *See also Ina Aviation*, 468 F. Supp. at 700; *Coates*, 756 F.2d at 551 (destruction of relevant disciplinary letters by manager of labor relations did not meet the requisite bad faith requirement for purposes of raising an adverse inference where the manager was unaware of the pending litigation).

While the facts are not entirely clear as to the completeness of defendant's response to plaintiff's pre-filing requests for documents, what is clear is that defendant attempted to have its Office of Counsel review all documents that might negatively impact the Corps's position with respect to a potential Hardwick claim or subsequent suit arising out of the Palmer Creek job. Although it may have erred in treating Hardwick's request as akin to a FOIA request (resulting in the withholding of certain documents that Corps counsel erroneously regarded as subject to a privileged status), this was not a wholly inappropriate defensive response and was generally in keeping with Corps policies and procedures in handling documents relating to potential claims. Mr. Denker's request to Mr. Palmateer to review the files in the Corps's local office at Glasgow and to send any documents, which he viewed as damaging, for preliminary review was promptly acted upon. Clearly, there were unidentified documents which were sent from the Glasgow office and received by the Office of Counsel in Kansas City. Apparently, these documents were placed in a discrete claim file which to date has not been found, although some evidence

suggests that that file existed until 1985. However, the record is devoid of any specific showing as to what documents actually were in that file. Plaintiff has neither alleged nor submitted any proof of the exact nature of any documents in this file or what these documents might have shown respecting the merits of plaintiff's claims. Hardwick argues that the missing information would generally demonstrate that the Corps recognized and hid the topographic errors in the Corps's Plans and that this "speaks volumes as to the purpose and extent of the Corps's cover-up." However, Hardwick has submitted no reliable evidence, such as relevant testimony, affidavits or exhibits, regarding the particular documents which were in this file or how, when or by whom they may have been destroyed. Further, there is no evidence in the record as to the probative value of any missing documents relative to the issues in this case. In these circumstances, the court cannot find that the missing documents would be critical or controlling in the resolution of issues respecting alleged contour errors in the Plans, or of any other relevant issues in this proceeding.

Furthermore, the maps, the GDM, the CRP data, hydrographs, rating curves and other information from the Corps's files was ultimately produced to plaintiff, albeit in an untimely manner in some instances. And such documents are in evidence and have been considered by the court in the resolution of plaintiff's claims. Plaintiff's discovery, while delayed in some measure by defendant's counsel's erroneous actions, was successful for the most part. This fact dispels some of the harm to plaintiff from any failure by defendant to respond promptly to plaintiff's discovery efforts. Accordingly, the court finds that since Hardwick has not demonstrated the criticalness or controlling nature of any lost or destroyed documents, the court will not speculate on the nature or content of these documents and, therefore, refuses to draw adverse inferences with respect to the missing documents.

Also, defendant contends that Hardwick has not demonstrated that the Corps's file was lost or destroyed in bad faith or that any Corps employee harbored a bad faith intent which affected the retention of sensitive Corps files. The worst implication that reasonably may be drawn from the fact that relevant Corps files are missing, is that these files were negligently destroyed. Such destruction, standing alone, is not sufficient to establish bad faith for purposes of raising an adverse inference. *Vick*, 514 F.2d at 737. Therefore, the court also finds that Hardwick has failed to prove that any missing files were lost or destroyed in bad faith. Defendant is entitled to the presumption that government officials have acted responsibly. *John Massman Contracting Co. v. United States*, 23 Cl. Ct. 24, 33 (1991); *Hoffman v. United States*, 16 Cl. Ct. 406, 410 (1989), *aff'd*, 894 F.2d 380 (Fed. Cir. 1990). Moreover, it would have been directly contrary to the Corps's established policy for any files containing documents relating to a claim or potential claim to have been destroyed. There is no evidence that the Contracting Officer or any other responsible Corps official actually ordered the destruction of any file. Many Claims Court cases have held that "irrefragable proof" of governmental wrongdoing is required to overcome this presumption. *Sanders v. United States Postal Serv.*, 801 F.2d 1328, 1331 (Fed. Cir. 1986). The court is convinced that that level of proof was not reached by plaintiff in this case.

In short, the court believes that plaintiff's proof has simply left too much in the realm of supposition and conjecture.[51] While

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51. It should be noted that although a Corps witness stated that the Corps had a policy of not giving out "inappropriate information," this statement is not proof that the Corps, in bad faith, would consciously and knowingly fail to tender relevant documents properly subject to

(Cont'd)

defendant's loss or misplacement of files, its lateness in producing documents during discovery, its failure to adequately explain the loss of key investigative reports (particularly relating to the January 1978 site visit), may be legitimately criticized as gross neglect or negligence (unquestionably, these actions also fueled plaintiff's recovery efforts through litigation), they do not constitute adequate proof of spoliation of evidence by defendant. Thus, the court concludes that the requisite factual elements necessary to give rise to application of the spoliation doctrine are missing. Accordingly, the court holds that plaintiff has failed to establish by a preponderance of the evidence a case of intentional, bad faith destruction of Corps files or documents. It follows, therefore, that plaintiff is not entitled to the benefit of an inference adverse to defendant with respect to any evidence which may have been in the missing Office of Counsel's claim file or in other Corps files.[52]

(Cont'd)
discovery simply because it considered them damaging. The court recognizes that defendant's statement to mean only that the Corps's policy is to exhibit great care in surrendering documents to a potential claimant without first subjecting them to a careful internal legal review in a legitimate effort to protect Corps interests. In fact, the court has carefully considered every one of plaintiff's somewhat repetitive allegations in this regard but finds them, in the aggregate, not convincing and insufficient.

52. The court notes that defendant has cited instances of the Corps's good faith in assisting plaintiff in its performance of this Contract. Some of these are: granting permission to shut off dewatering pumps at the Main Stem structure during the winters of 1979 and 1980 to save plaintiff operating costs; granting permission for one survey rather than two before stripping with an agreed upon adjustment factor; accepting the VECP in good faith; agreeing to all weather delays as first sought by Hardwick;
(Cont'd)

Appendix B

Plaintiff's Remaining Claims

Plaintiff next alleges that the government incorrectly performed three quantity calculations which resulted in underpayments. In this regard, plaintiff contends that defendant used a less accurate computer-based method of calculating quantities than the planimetric method which plaintiff's witness, Mr. Bradfield, testified defendant should have used.

Defendant's witness, Mr. Denker, testified that when quantities are calculated using a planimeter, the calculation will not be as accurate as the Corps's computer model calculation method because when using a planimeter the calculation must be performed three times and the results averaged. Although Mr. Bradfield testified at some length as to the superiority of the planimetric method, the court is not convinced that there is any basic deficiency in the computer model used by defendant in its calculations. Both methods may have drawbacks, but the Corps's method is reasonably accurate and acceptable under the circumstances. Consequently, the court finds that plaintiff has failed to carry its burden of proof respecting this claim. Thus, the court finds that this claim is without merit, and must be denied.

(Cont'd)
allowing use of a circular blower in place of pit burning to alleviate a smoke problem; relaxing the standards to permit sheet piling in the structures; assisting in setting toe stakes when requested; agreeing to accept the wrong alignment of the levee when Hardwick had misplaced the stakes; calling the overbuild to Hardwick's attention to save it money; and, calling a mathematical error to Hardwick's attention in its computation of the cost savings from the VECP which effectively saved Hardwick money.

Appendix B

Plaintiff also claims extra transportation costs for the riprap protection material it needed to comply with the specifications. The specification at issue is Special Provision 37, which provides, in pertinent part, as follows:

> (a) [S]tone protection material meeting the requirements of these specifications *can be produced* from the sources listed below: Howard Quarry, Malan Quarry, Franklin Quarry, Glasgow Quarries, Mt. Airy Quarry.
>
> (b) Material may be furnished from any of the above-listed sources or at the option of the contractor may be furnished from any other sources designated by the contractor.

(Emphasis added.) Plaintiff reads this specification as impliedly warranting that these designated sources will sell the riprap materials to plaintiff at any time during construction. The undisputed facts show that although plaintiff did contact Howard Quarry to obtain a quotation, which was reflected in plaintiff's bid, plaintiff did not immediately contact any of the other quarries listed. Plaintiff received an offer to sell riprap from Franklin Quarry in April 1979, but did not buy material at that time.

Under these facts the court is satisfied that no warranty of commercial availability arose. It is clear from the above provision that responsibility is placed upon bidders to assure availability of material. At the time that plaintiff determined that specification riprap was available from local suppliers, it could have contracted with any of the identified suppliers able to sell specification material to "lock in" that source at a specific

delivered price per ton or per cubic yard. Apparently, plaintiff's reason for not doing so, logically enough, was that the riprap, if bought and stored at the site, might wash out or deteriorate due to weather and, accordingly, not meet applicable specifications when needed. In that event, the riprap would be virtually worthless. However, Hardwick necessarily assumed that risk under the Contract. *See Franklin E. Penny Co. v. United States*, 207 Ct. Cl. 842, 855, 524 F.2d 668, 675 (1975). Defendant ultimately accommodated plaintiff by amending the riprap specification in order to permit the use of one or more new sources of riprap. Under the circumstances, the court concluded that defendant gave its approval in timely fashion. Unfortunately, the approved new source selected by Hardwick resulted in greater than anticipated trucking costs. Because these costs were not the fault of the Corps, the court must also deny this claim.

Plaintiff claims eight additional calendar days of time extensions and seeks cancellation of defendant's liquidated damages claim in the amount of $1,855. It seeks the additional days on the ground that defendant failed to include these eight days within Modification P00006 due to mutual mistake. Defendant contends that under Special Provision SP-1(b), the Contract allowed 118 calendar days for anticipated delays due to weather conditions, and that time extensions in excess of 118 calendar days were allowable, pursuant to GP-5(d), once the 118 days were expended. Defendant argues that Golie Hardwick and John Morris actually agreed that there were 34 weather delay days between June 14, 1977 and October 16, 1977, and that their agreement was confirmed by John Elmore's letter dated November 17, 1977. Moreover, defendant contends that plaintiff did not object to this affirmance. Thus, without any reservation of rights by either party, Modification No.

P00006, which due to weather delays in excess of the 118 days already allowed, extended the Contract completion date an additional 34 calendar days (between June 14, 1977 and July 16, 1978), was a binding commitment signed by Ted Hardwick for Hardwick on August 14, 1978 and by Col. Richard Curl for the Corps on August 7, 1978.

Further, defendant disputes plaintiff's entitlement to a total of eight additional delay days — five days, from June 18, 1977, to June 25, 1977, and three days, from June 28, 1977, to June 30, 1977 — because it contends that those days were not suitable for work. Defendant argues that these particular days find no support in applicable daily logs. Defendant points to Daily Log number 1 which shows that June 28 was plaintiff's first day of equipment mobilization. Defendant asserts that this fact indicates that neither the Corps nor Hardwick had actually assigned personnel to the job site during the first days of the Contract — from June 14, 1977 until June 28, 1977. Also, defendant argues that Daily Logs numbers 2, 3 and 4 similarly support its argument that no work was delayed by bad weather during this period. Thus, defendant argues that even if bad weather days had occurred during this period, since the work had not actually begun, plaintiff could not have been delayed due to bad weather. Finally, defendant argues that by voicing no objection to Mr. Elmore's letter and by signing Modification P00006 without any reservation, an agreement was reached by the parties which constituted a legally binding accord and satisfaction. Thus, it argues that even if this claim had merit prior to execution of Modification P00006, it is now completely barred.

Once again, defendant's arguments have merit. Hardwick failed to condition Modification No. P00006 in any way,

signifying that it was both complete and unqualifiedly acceptable. Therefore, it is both fair and proper to deny plaintiff's claim for additional delay days when it had an opportunity to condition its acceptance of the agreement but elected not to do so. *G. M. Shupe, Inc. v. United States*, 5 Cl. Ct. 662, 673 (1984). Consequently, the court finds that this claim must also fail. *Lyburn Constr. Co.*, 85-1 B.C.A. ¶ 17,764 (ASBCA 1984).

Plaintiff seeks a determination that defendant is not entitled to an assessment of liquidated damages against it. However, this assessment of liquidated damages, in the amount of $1,855, against plaintiff is appropriate for the reasons assigned by defendant. Therefore, under the circumstances of this case, the court finds that defendant must receive this assessment. However, the court will make the assessment subject to an off-set in the amount of damages (yet to be determined) to be awarded to plaintiff because of the court's determination that defendant is liable to plaintiff for defendant's over-inspection during construction.

Plaintiff claims interest on certain amounts not paid because of an outstanding quantity dispute between the parties.[53] Defendant ultimately paid an amount less than plaintiff originally sought. Plaintiff's interest claim is based upon the amounts actually paid. However, in accordance with standard procedures, the Contracting Officer's representative requested plaintiff to reconcile quantity payments, a procedure known as adjusting final quantities. However, plaintiff never complied with defendant's request, and plaintiff never submitted a claim

53. As part of its April 1986 claim, plaintiff requested various final quantities for which it had not been previously paid.

to the Contracting Officer for interest. In these circumstances, defendant contends that plaintiff, in the absence of a dispute and a proper submission to the Contracting Officer, plaintiff can present no justiciable claim for interest to this court. Clearly, defendant is correct. Plaintiff failed to follow the standard reconciliation procedures and to properly and formally object to the payment defendant made. Binding precedent holds that no CDA claim exists in the absence of a dispute which the parties were unable to resolve. *Mayfair Constr. Co. v. United States*, 841 F.2d 1576 (Fed. Cir. 1988), *cert. denied*, 488 U.S. 980; *Hoffman Constr. Co. v. United States*, 7 Cl. Ct. 518 (1985); *Esprit, Inc. v. United States*, 6 Cl. Ct. 546, 548 (1984) *aff'd*, 776 F.2d 1062 (Fed. Cir. 1985) (unpublished op.). Clearly, there was no "dispute" over the particular quantities which was properly presented to defendant as required by the CDA. The Corps made payment without the claimed interest, and that payment was accepted without further objection. Therefore, the court finds that this claim is without merit and must be denied.

CONCLUSION

It is abundantly clear to the court that the Project was a very difficult levee project from the outset and, further, that there were very few levee contractors who could have succeeded, as Hardwick did, in constructing this levee in accordance with the specifications, given all of the difficult weather conditions and other circumstances which Hardwick encountered. In fact, it is a credit to Hardwick's perseverance and the personal determination and integrity of its executives that it completed the work under such conditions. However, under the Contract, plaintiff assumed the risks of bad weather, availability of a skilled labor supply, material supply, material price, sufficiency of equipment, subcontractor availability,

construction methods, and the accuracy of its bid. The record demonstrates that extremely bad weather conditions were the primary cause of plaintiff's bid being too low to permit it to construct the Project at a profit. In effect, because of the occurrence of such conditions, which Hardwick did not anticipate and adequately allow for in its bid as a reasonable contractor would have under the circumstances here present, it substantially underbid this job, notwithstanding the many warnings of job-site wetness available in the Plans and from a prudent site visit and investigation of local conditions.

The facts further show that because of the flat terrain at the site, excess water simply could not quickly drain or evaporate from the site. Thus, this excess water, whether from flooding from the Missouri River, overflows in Palmer Creek, back-water in Palmer Creek, high lake levels, excessive rains which repeatedly inundated the job-site and high lake and water tables (which sometimes reached ground surface or even became artesian), so saturated the soils that plaintiff's equipment frequently could not function, required more frequent repairs and often bogged down. Conditions became so severe that after commencement of construction Hardwick, in order for it to work effectively at the job site, was forced to switch to the uncompacted fill alternate method of construction, obtain approval of alternate borrow sources, use specially constructed timber mats for its dragline operations and acquire additional draglines and special, more expensive, floatation equipment for use at many locations. Consequently, plaintiff's completion of the Project was inordinately delayed, and plaintiff suffered significant monetary losses. In fact, plaintiff's losses were such that after completion of the Contract, it determined to abandon operations.

Appendix B

The court is well aware of the tragic circumstances and hardships which plaintiff and its principals encountered during and after Hardwick's performance of the Contract. However, in this proceeding under the foregoing facts, this court is without discretion under the CDA to shift the responsibilities assumed by the parties under the Contract, to award unproven money damages, or to find for one party over the other based solely upon equitable considerations. Therefore, for the above-assigned reasons, the court finds that plaintiff is entitled to recover damages from defendant based upon plaintiff's breach of contract claim for over-inspection with regard to the Corps's misinterpretation of the lift thickness requirement. However, the plaintiff's evidence has failed to establish by a preponderance of the evidence that any of its other claims have merit. Accordingly, they are denied.

Since this Opinion does not resolve the amount of damages to be awarded plaintiff for those aspects which the court has made findings in Hardwick's favor, further proceedings are needed prior to final entry of judgment. To expedite the process, the parties are hereby instructed to negotiate in good faith to reach a stipulation regarding the amount of damages and interest which are supported by this Opinion. By entering such a stipulation, of course, neither party would be expected to waive its right to appeal any aspect of this court's findings. The parties should be able to reach such an agreement within 30 days of the date of this Opinion. At the end of the 30 days, the parties shall file a joint status report informing the court of the amount of damages and interest on which the parties have agreed.

IT IS SO ORDERED.

s/ Wilkes C. Robinson
WILKES C. ROBINSON, Judge

APPENDIX C — OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DENYING PETITION FOR REHEARING DATED AND FILED NOVEMBER 2, 1998

United States Court of Appeals for the Federal Circuit

97-5090

HARDWICK BROTHERS COMPANY II,

Plaintiff-Appellant,

v.

UNITED STATES,

Defendant-Appellee.

ORDER

A combined petition for rehearing and suggestion for rehearing in banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the suggestion for rehearing in banc having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

Appendix C

ORDERED that the suggestion for rehearing in banc be, and the same hereby is, DECLINED.

The mandate of the court will issue on November 9, 1998.

FOR THE COURT,

s/ Jan Horbaly (AV)
Jan Horbaly
Clerk

Dated: November 2, 1998

cc: Michael J. Blake
Brian S. Smith